

NAVAL AVIATION

NEWS

14-
2-
3-
5-
6-
7-
8-
9-
10-



Navy Test Pilots
Soviet Air Force
Pulse Jet Engine

Sept. 1948

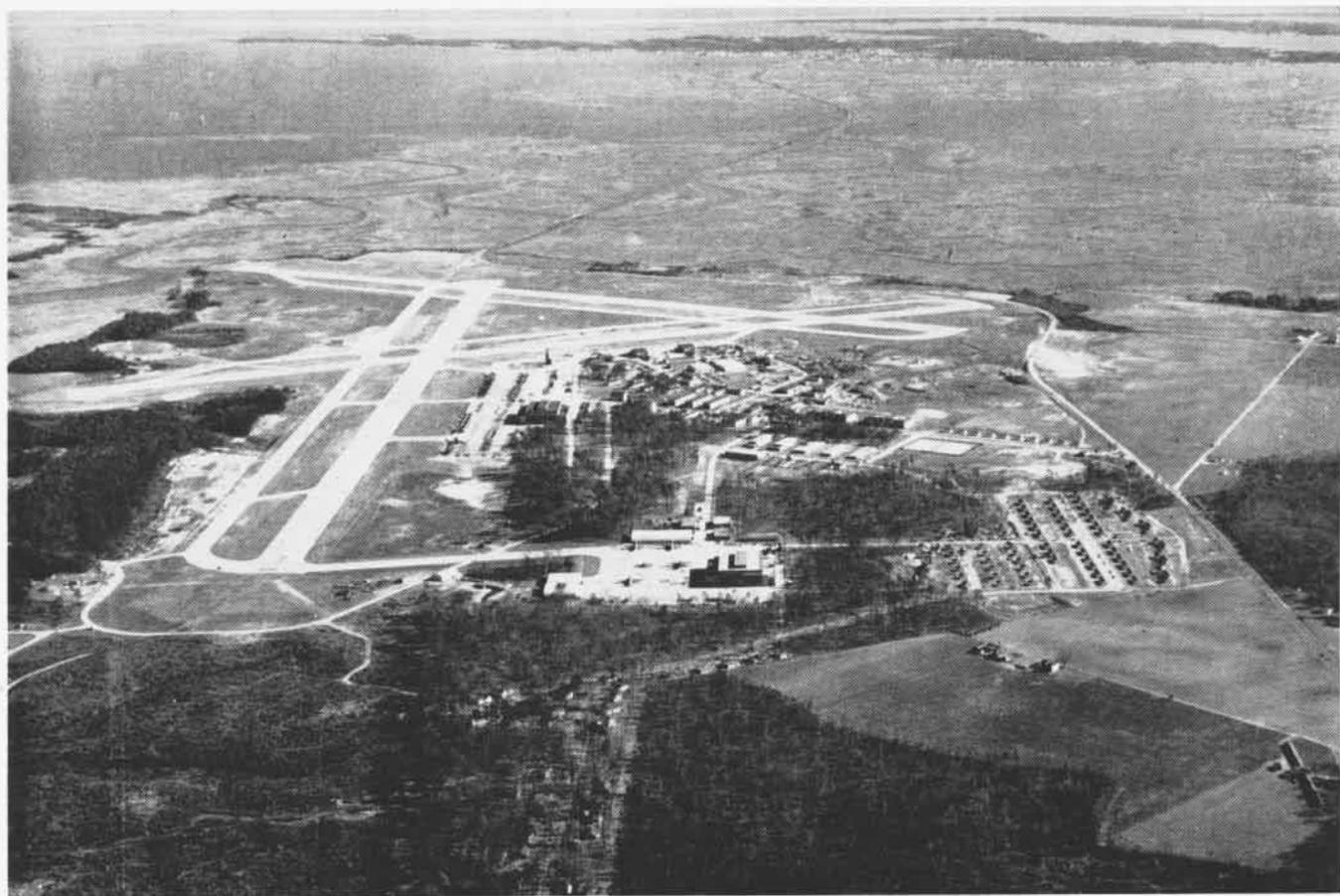
RESTRICTED





SHIPS AND AIRCRAFT

These two East Coast air stations may be difficult to recognize. The top one has a lot of mothball ships nearby — does that help? Answers are on the last page.





NAVY TEST PILOT

THE OTHER day 13 naval aviators and three Marine pilots were ordered to Naval Air Test Center at Patuxent to enter test pilot training.

And oh, heigh ho, for the life of a test pilot! For the life of the debonair gentleman who comes down from a life-and-death struggle with the elements to proclaim calmly: "The critical Mach number of the jet *Monster* XABC-14 must be around .998, for it was at .999 that I lost my tail. Now, if you don't mind, I'll have a cigaret loaded with that fine burlap; it burns better at 92,000 feet."

The test pilots' school at NATC does not turn out pilots like these. As a matter of fact, only Hollywood can do that. The type of test pilot that is expected to graduate from the six-month course down at Patuxent River is a far different breed. Sure, he'll establish critical

Mach numbers for new airplanes. He'll obtain the data over a period of time, listing facts and figures on a knee-pad during flight, making reports, reading the automatically-recorded information from his test instrumentation. And his final report will not be delivered in an offhand, casual manner to the newspaper reporters. It will be on paper in graphs and charts solely for edification of engineers, who will take it from there. He won't lose his tail. His time history of flights in critical Mach number range will contain everything from elevator angle, tab angle, calibrated and true airspeed, altitude, normal acceleration and dive recovery device position. All of the data mean something and the pilot must know what he is talking about. It isn't the movie-type of glamor pilot the Navy wants, but the flier who can use his brains.



SOME OF NAVY'S BEST PILOTS AT NEW SCHOOL

PILOTS TRAIN SIX MONTHS AT TEST SCHOOL

TO UNDERSTAND what test pilots must be, particularly Navy test pilots, and what the test pilots' school will teach in the six-months course of instruction, it is necessary to know something about test work.

At Naval Air Test Center, where all of the Navy's aircraft test work is done, there are five divisions. Approximately 100 test pilots are attached to these various units. All experimental aircraft, and a certain percentage of production models, after acceptance by the Navy, go to Patuxent for the Board of Inspection and Survey trials. Flight, Armament, Electronics, Service and Tactical Test each get a crack at the new airplane.

In the Flight Test division, the airplane gets flight trials, carrier acceptability trials and test of stability and control characteristics. Other tests determine the flying qualities and performance characteristics of aircraft and general aeronautical material under actual flight conditions.

During these, a test pilot will do all the glamorous things so glowingly attributed to him by Hollywood—and a multitude of grueling items that are not so well publicized. Such items as operational ceiling and critical Mach number are established by test pilots flying the airplane in those conditions. Carrier performance is ascertained by hundreds of simulated carrier landings, arrestation and catapult shots.

Day after day a test pilot will make landings and take-offs in a new-type seaplane under widely varying load conditions. For every hour he is in the air or on the water another hour will be spent at a desk reducing analysis data to charts, graphs and reports explaining his findings.



When the Navy gets new, untried aircraft, its test pilots put them through their paces to see if they meet requirements

Carrier landings will be made on the field with all types of landing and loading conditions. Each landing will record the load imposed on the plane's structure, on the arresting and landing gear. And it will show precisely where the strain is encountered. A tail-hook that functions perfectly under normal conditions may snap during a fast, heavy-load



Pilots in the Test Pilot School pose with officials; front row, Cdr. S. S. Sherby, Director; Rear Adm. A. Soucek, Commander NATC; Capt. F. M. Trapnell, Coordinator of tests, and Lt. Cdr. E. P. Schulz, Asst. Director. Second row: Lt. (jg) D. A. Lehn, Lt. Cdr. M. R. Dahl, Lt. Cdr. J. S. Hill,

Lt. Cdr. N. E. Harris, Lt. Cdr. J. G. Hedrick, Lt. Cdr. J. R. Rees, Cdr. H. N. Funk. Third row: Lt. R. M. Wenzell, Lt. (jg) R. A. Walker, Capt. T. J. Ross, USMC; Lt. E. J. Berger, USMC; Lt. R. R. Roy, USMC; Lt. R. F. Kennon, Lt. C. B. Smith, Lt. K. B. Duke. Lt. (jg) S. Evans, also student, absent



Test pilots must know about many different planes, such as this F6U with nose up so radio gear and ballast are exposed

landing. If an emergency landing is necessary just after take-off, a little "beefing" in the tail might mean a plane saved. So, planes are changed, modified, "fixed" and tested again. Hours at the stick and more hours behind a desk make up the work of a test pilot.

Pilots in Armament Test conduct armament trials of aircraft, test it under actual flight conditions, and test and develop aerial tow targets and equipment. Do the bomb racks work? Can the rocket rails be improved? How do the guns fire at 30,000 feet with temperatures down around -67? If there is a better way to do it, let's do it that way. Today armament is much concerned with making fighting airplanes out of the jet speedsters.

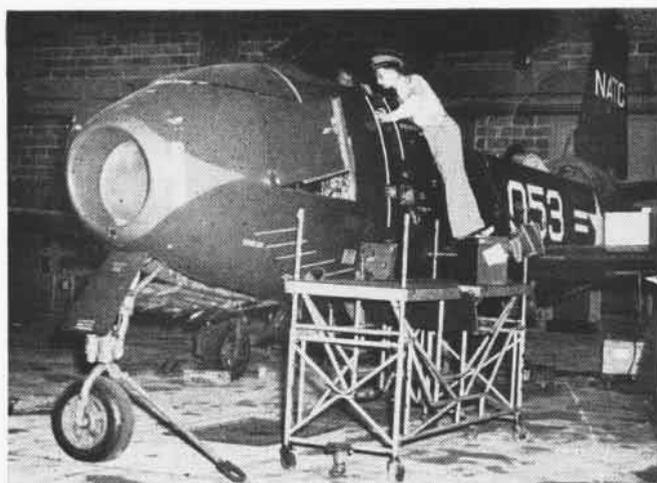
Everything electrical and electronic gets the works in Electronics Test. Evaluation of the operating performance of such equipment under laboratory and flight conditions is carried out by test pilots in this division.

Service Test has its pilots flying new aircraft types under simulated combat conditions until they are ready for survey. On the road to ruin, the serviceability and maintenance problems of new-type aircraft are determined. New methods of maintenance are discovered and evaluated. They find out what parts will need replacement most often. They establish the number of hours a plane can be expected to hold together in a fight.

Pilots in Tactical Test are charged with the tactical development of aircraft and aeronautical equipment, giving qualitative tactical analysis of the aircraft from the pilot's point of view. They do not formulate new tactical methods of attack. Their reports of what a plane is capable of doing may suggest changes in tactics, but that is not their province. What they are immediately concerned with is what the plane can do from a tactical viewpoint. For example, can a dive-bomber dive? Is a fighter capable of fighting?

NEW JET fighters, in some cases, are capable of going almost their maximum speed short of compressibility in straight and level flight. Obviously, a fairly shallow dive at full power will place these planes in the middle of the critical speed range. Tactical test finds out at just what angle dive the plane goes over the red line. The pilots who get these planes operationally will have to figure out how to fight without exceeding this dive angle; or Tactical Test will recommend methods by which the plane can be kept slow enough to fight. Perhaps dive brakes will be the ultimate answer, perhaps some other device yet unknown.

Even the best and most intelligent pilot can't enter a test unit cold and be of any value until he has absorbed the testing fundamentals—techniques and methods. Prior to open-



Another new Navy jet which test pilots familiarize themselves with is this FJ1 Fury; western squadrons are flying plane



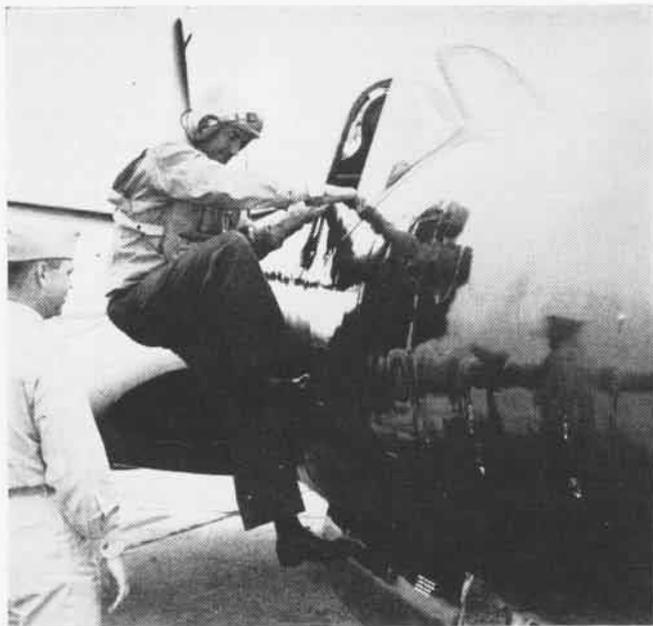
Test pilots are important cog in development of aircraft, from large to small; R60 is Navy's largest land transport

ing of the test pilots' school it took a new pilot from six to 12 months with a unit before he was of any value. The Flight Test division offered a short test pilots' course prior to the opening of the test pilots' school, which helped indoctrinate Flight Test personnel and get them on the right road.

However, the school had to run in competition with regular flying duties in Flight Test and was necessarily sketchy.



Students of test pilot school take a look at what makes the FJ-1 go; six months course hits both theories and practice



Admiral Apollo Soucek, CO of NATC PATUXENT, himself an old test pilot, climbs aboard a *Phantom* to see how it flies



Patuxent testing includes many catapultings from runway; test pilots get wide variety of experience at new Navy school



Embryo test pilots give the FJ-1 a thorough going-over as it awaits engine change at Flight Test at Patuxent River center

NAVY AIR LEADERS RUN TEST PILOTS SCHOOL

DIRECTOR of the test pilots' school, one of its earliest advocates and its head instructor is Commander S. S. Sherby. Commander Sherby has spent some four years at Naval Air Test Center as test pilot and engineer. An academy graduate, he finished off a PG course at MIT in aeronautical engineering, and is one of the station's best engineers and test pilots. Under Commander Sherby's direction, there is Lt. Commander E. P. Schuld, aeronautical engineering graduate of Tri-State College.

Admittedly shooting for the moon, the school is aimed toward producing the world's best test pilots. Students will be molded into the pilot-engineer-reporter form, which makes good test pilots. One half of each day is devoted to academic work in the school, the other half to flying airplanes. Captain F. M. Trapnell, coordinator of NATC and a very interested party to the test pilot training program, promised the boys plenty of flying.

At present the school has seven aircraft assigned, including an XNQ, F6F, F7F, F8F, SNB, PB4Y-6A, and a PB4Y-2. Later on, two FH-1's, an XBT2D and a couple of JRB's should be added. These will be used for familiarization flights, instrument qualification and some work on testing technique. In addition, each day's schedule will have some of the boys flying hops for Service Test.

A typical scheduled hop in Service Test will have a student landing and taking off a number of times, flying at military power for five minutes, climbing the airplane to service ceiling, diving at a 15-degree angle at rated horsepower from 20 to 10 thousand feet, and generally wringing the airplane out. It includes no analysis work on the part of the pilots, but requires some precision flying and familiarizes them with procedure piloting—flying with a purpose.

Later in the course, as the pilots become more advanced, they may be utilized by Flight and Tactical Test, which does demand some flight analysis.

A lot of books and brain cells get a work-out also. During the first half of the course basic engineering subjects are taught along with fundamental aircraft courses.

The first month is filled with algebra, physics, trigonometry and slide rule. The second month continues with physics and goes into aerodynamics, mathematics, engines, fuels, lubricants, weight and balance and materials. The third month gives more aerodynamics and engines, takes up propellers, instruments, turbojets, and report writing.

A well-earned nine-day rest is dropped in at that point and then the second half of the syllabus comes up. In the second half, the student begins to learn how to do the things his job will require. No longer concerned with basic information, he now begins to use his physics, math and slide rule.

THE FIRST month of the second half teaches something of stability, specifications and gets into the Flight Test Manual—the test center's bible. The second month of the latter half continues with the Flight Test Manual and goes into specific unit work, such as Tactical Test, Armament Test, Service Test, and Electronic Test. In addition, performance methods are studied, helicopters are analysed, and a field trip is made to the David Taylor Model Basin.

The final month of the school is devoted to Flight Test, helicopters and talks by various BUAER representatives, plus a number of field trips to experimental laboratories and manufacturers' plants. The 25th week of the school sees the

graduation exercises. No attrition is anticipated and all the boys are expected to graduate with honors.

Perhaps this "no attrition" appears optimistic or might lead one to believe the school's standards are at half-mast. This is not true; every man is expected to be a straight "A" student. With some of the boys this will mean extra assistance work for themselves and the instructors, but when a subject is finished each individual will have a thorough knowledge of it.

How can the school be so sure that all of the students will be capable of absorbing so completely the material given? Very careful selection insures this. The method of selection used to fill the student quota reminds one of a successful officer's candidate interviewer during the war. One particular interviewer for the Army's officer's candidate school wound up a six-month period of interviewing with 100% of his students graduating.

The General, interested in this fascinating record, went around to find out the interviewer's magic method of selection. The man gave the General an ironclad secret of success. He asked applicants just two questions; if both were answered in the affirmative, the boy got the school, if either was answered in the negative, it was "no dice." The questions: "Do you have a college degree? Were you a Phi Beta Kappa?"

Some of the students attending the test pilots' school have never gone to college, but they all have Phi Beta pilots' records and grade "A" intelligence. The manner in which they were selected insures these prerequisites.

School billets were not chosen by direct application. Fleet commands throughout the Navy were requested to nominate and recommend the best qualified pilot personnel for test work. Out of the 40 or 50 pilots selected by various commands, 16 were screened and selected by the school board.

Upon graduation the students will join various units on the station for a tour of duty. Probably the majority of pilots will be taken up by Flight and Tactical Test, with a few going to Armament, Electronic and Service Test.

The school will convene every six to nine months and will provide enough personnel to fill billets depleted by rotation and attrition at NATC. All future incoming pilots are expected to enter test work through the test pilots' school.

ON OPENING day Rear Admiral A. Soucek, Commander of NATC, and oftentimes member of the Navy's test program during his naval career, talked to the students. The Admiral, who twice held world altitude records, told the embryo test pilots what was expected of them.

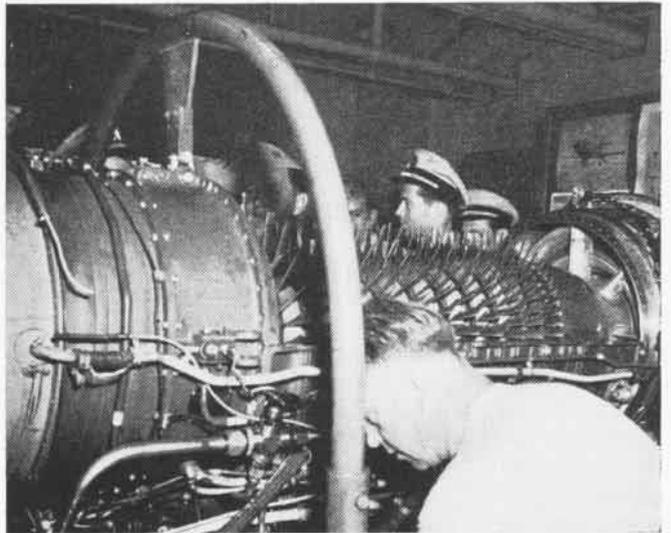
A test pilot, he stated, must have three basic qualifications. *First*, he must be a good pilot. This doesn't mean having the ability to execute a slow-roll at 50 feet and live. Nor does it mean a pilot capable of flying any airplane the Navy has. It means a pilot capable of good flying, with a keen desire to fly precisely and an enthusiasm for the job "well done." He must be capable of absorbing new flying techniques.

Number two requirement: A test pilot must be a good aeronautical engineer. In test work, the plane, engine, and everything that happens to both must be carefully analysed as to performance, deficiencies, capabilities and what not. The test pilot is not just a chauffeur; he must know not only how he makes his plane react, but why it reacts as it does. And he must be capable of understanding aeronautical terms, charts, and formulae. He must know technical language.

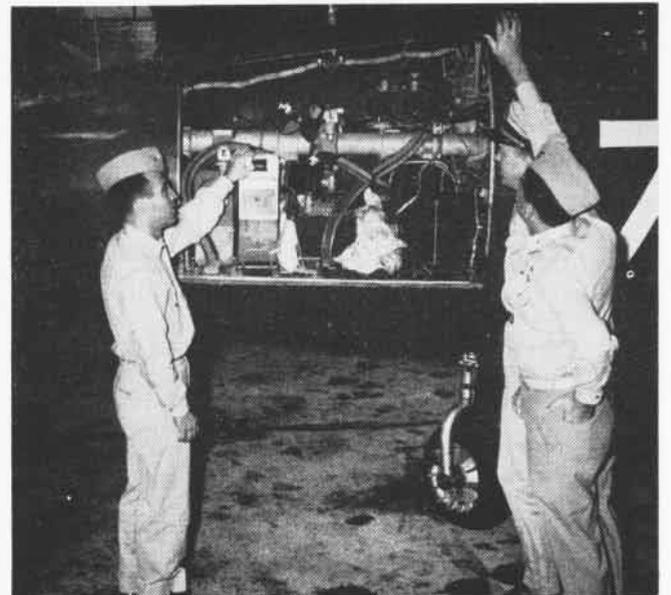
Three: The test pilot must be, above all else, a good reporter. He must be capable of transmitting the knowledge he has gained from flying the aircraft to all the people who stay on the ground, so they can understand and correctly evaluate his analysis. The fact that a test pilot flew an aircraft to the plane's critical Mach number means nothing if he doesn't get it on paper for the experts to analyze.



Helicopters, too, are part of the course for test pilots at Patuxent; they get chance to fly everything the Navy employs



Jet engines, as well as planes, must be thoroughly understood by test pilots; they examine a TG-180 axial flow engine



Recorder installed in Phantom's nose helps keep data on the plane in flight; students fly planes as well as study books

GRAMPAW PETTIBONE

High Jinks

A flight of two F4U's on an authorized oxygen tactics hop proceeded to an altitude of 41,000 feet and remained there for 15 minutes, after which they descended to 18,000. At this altitude the section leader placed his wingman in column position, and nosed over to increase his speed. At approximately 230 knots he pulled up into a vertical climb and held it until he stalled out. The plane went into a series of unusual attitudes and regained normal flight after a fall of about 5000 feet.

At this time the section leader remarked over the radio that he was glad to have recovered from that maneuver, and started a spiraling descent. When down to about 4,000 feet he called his wingman and asked him to make a visual check of his plane as it was vibrating badly. The wingman was unable to notice any structural damage and the flight continued on down to 1500 feet.

At this time the section leader added power, and stated that he would climb back to 5,000 feet to check the flight characteristics of his plane. As he added power his plane began to stream oil and smoke. The airspeed fell off to a point where the wingman could not stay in formation with 50 degrees of flap and no power. As he pulled ahead of the section leader the latter signaled for a shift of frequency and notified the tower that he was making an emergency water landing.

A few seconds later his plane went into a diving turn to the right and struck the water at a 45 degree angle. The pilot opened his hood and made an effort to get out of the plane in this dive. He was barely clear of the plane and his pilot-chute had just started to stream when he hit the water. The plane sank immediately, while the body and parachute remained afloat and were recovered a few minutes later by a nearby fishing boat. The medical officer was of the opinion that the fatal injuries may have been received on impact with the tail surfaces of the aircraft.



Grampaw Pettibone says:

Since the aircraft was not recovered the accident board can do little more than guess at just what caused the severe vibration and apparent loss of power. It may be that some structural damage was suffered during the unusual and violent maneuvers which followed the vertical stall at 18,000 feet. However, if the strength



limitations were exceeded at this time, it seems probable that a major structural failure such as disintegration of the tail surfaces would have resulted. Since this was not observed on the visual check, it is much more likely that some internal failure in the engine structure caused the vibration and loss of power.

But let's go back and look at the sequence of events that led to the accident. In the first place this pilot violated the provisions of Aviation Circular Letter 97-47 by proceeding to an altitude of 41,000 feet. I think his actions at 18,000 feet indicate pretty clearly that he was still suffering from the effects of anoxia. My records show that pilots do some very curious and unpredictable things when their judgment is affected due to insufficient oxygen. For example, there is one case on record where a PBM pilot remained at high altitude for some time without using *any* oxygen equipment. Finally he began to laugh and put his feet up on the yoke and started playing roller coaster. Some of the passengers put their chutes on and when the plane broke in half, they tumbled out and survived to tell of this unusual case.

From the time this F4U pilot left 41,000 feet until he met his death, his judgment, too, seems to have been very poor. First he attempted a foolish and prohibited maneuver. Then, when he found his plane vibrating badly, he continued to lose precious altitude. When it became apparent that he would have to make an emergency landing, he failed to keep sufficient airspeed. And finally when he decided to bail out, he was so low that by the time he got the canopy open and got out of the cockpit, he was only 75 or 100 feet off the water.

He was joking with his wingman until a few minutes before this series of errors cost him his life.



Dear Grampaw,

You probably heard this yarn eight or ten years ago when it was first making the rounds, but maybe some of your readers haven't heard it or have forgotten it.

Back in the early days of the aviation cadet program a student on a solo hop in primary training got lost about 25 miles north of Corry Field. When he started back near the end of the hour he suddenly realized that he had no notion of which way to head to reach Corry Field. After flying about ten minutes without recognizing any familiar sights he decided to land his N3N in a field adjacent to a farm house.

After a nice landing he got out and walked over to the farm house where he learned that he was nearly due north of the air station. Since he was then a little overdue, he asked permission to telephone the station to say that he would be right back. He gave his position and was directed to fly back on a heading of 170°.

About 20 minutes later the phone rang again in the Corry Field operations office, and the conversation ran something like this:

"Hello, this is Aviation Cadet _____ again. Say, no wonder I'm lost. I took off and tried to get on a compass heading of 170, but the compass in this plane is defective. It won't read above 36. What shall I do?"

The cadet was instructed to stand by the plane, and told that an instructor would come out to fly him back. When the instructor arrived, he took one look at the field where the cadet had made two successful landings and one take-off and let out a long low sigh. It was so small that he insisted on removing two fences before he would attempt a take-off.

Anyway that's the way I remember it.

Sincerely,

Cdr. _____



Grampaw Pettibone says:

Many thanks for this yarn. As you say it's old enough to have whiskers as long as mine, but perhaps it will be new to naval aviators of recent vintage.

"Quick Henry, the Ripcord."

The instructor was flying in the rear seat of an SNJ instructing a student pilot of the Brazilian Air Force on a scheduled syllabus flight in primary training. The plane entered an inverted spin and the instructor inadvertently unlocked his safety belt and fell out of the plane. Fortunately his parachute functioned well and his only injuries were minor scratches suffered when he landed in a pine tree.

The student stayed with the airplane and does not remember just what corrective action he took, but the plane was back in straight and level flight at about 2000 feet. The student suffered ecchymosis of both eyes due to the negative "G" pull, but made a successful landing at an outlying field.

Grampaw Pettibone says:

I'm not just sure what ecchymosis is, but I have a notion it results from having your eyeballs pulled an inch or so out of their sockets.

My congratulations to this student on his successful landing. I hope the instructor has all the pine needles out by now.

You Count 'Em

The pilot of an SNJ took off from Jacksonville, Florida on a contact cross-country flight to Miami via Tampa. He had slightly over 600 hours flight time, of which 175 were in the SNJ. In the preceding three months he had flown 18 hours as a member of the Volunteer Reserve.

The flight to Tampa was uneventful, but shortly after leaving Tampa the pilot could not positively fix his position. He then decided to take up a heading of 090° expecting to cross to the East Coast. After flying for some time he came to a large body of water, which he correctly identified as Lake Okeechobee, and proceeded to the southern end of the lake.

At this time he was less than 40 nautical miles from West Palm Beach and had approximately 50 gallons of fuel left—roughly, enough for a two-hour flight. Apparently he was still dubious as to his position, and felt that he should get a definite fix before proceeding over the swamps. At 1105 he sighted a small uncharted airfield near the town of South Bay. Without dragging the field, he landed downwind, choosing a runway which looked fine from the air but which had been plowed and rolled two days before.

About 160 yards from the point of touchdown the wheels dug into the soft ground and the SNJ flipped over on its back. The pilot was extricated with the assistance of a nearby work-

man a couple of minutes later. His shoulder harness and safety belt functioned correctly and he was uninjured.

Grampaw Pettibone says:

This reminds me of an accident which occurred a couple of years ago when a former PB4Y pilot was flying a Piper Cub for the first time. This chap suddenly discovered that he had only 11 gallons of gasoline left and made an immediate emergency landing in a pasture despite the fact that there were four or five airfields within a radius of thirty miles. For some reason or other the fact that he still had more than 50% of his initial fuel supply simply didn't register. Many years of burning gas at the rate of two or three gallons a minute caused him to believe that an emergency existed when he actually had enough gasoline to keep the Cub in the air for two hours.



Ride 'Em, Cowboy!

A flight student in a solo hop in an SNJ was practicing full-flap precision landings. His first approach appeared normal until just before the plane hit the deck, at which time it was in a left skid. Immediately after contact the plane began to swerve to the right. The student applied left brake, left rudder, and full throttle. After completing a ground loop of 90 degrees he became airborne again.

He then noticed that he was unable completely to retract his left wheel so he circled the field and asked for a wheel check. The engineering officer checked his wheels, which appeared to be down and locked, and instructed him to come in for a landing. This landing was just about like the previous one except that the student completed a ground loop of 135 degrees before taking off again.

After the second landing attempt a further check in the air showed the left landing gear to be bent inboard. The pilot was instructed to try a third landing, using full left brake. On this landing he got down safely without further damage to the SNJ.

Grampaw Pettibone says:

Maybe the lad used to work in a rodeo—anyway he's a real rough rider. The accident board is of the opinion that the left landing gear was damaged on the first landing attempt, and bent further inboard on the number two ground loop.

"Dear Grampaw Pettibone:

"Perhaps you can draw a few morals from this account of a near accident.

"Recently I landed a JRB-4 at a USAF base. I discovered that I had no left brake whatsoever, and reported this fact to the tower. The tower instructed me to make a 180° turn and taxi back down the runway in use until I came to the turn-off intersection.

"I proceeded very slowly, using the tailwheel lock, and keeping the props in full high pitch to reduce speed and save the right brake. I was about halfway to the intersection when I saw a P-47 taxi out and turn onto the downwind end of the runway. I considered questioning the tower concerning him but did not, since he appeared to be waiting.

"It later developed that the P-47 was on a test hop, and the tower believed it to have no radio. Actually, the pilot was receiving, but had no transmitter. Since it was a test hop, his complete attention was given to his instruments. As he taxied out some minutes after my landing, it never occurred to him that I might still be on the runway. After he started his take-off, the tower held the red light on him, but he was still on instruments.

"I lost about three seconds convincing myself that he was actually coming toward me. It took another two seconds to unlock the tailwheel and apply full throttles. Of course nothing happened because the props were in high pitch, so another three seconds were lost before I really started moving out of the way, after shoving prop controls forward.

"The P-47 cleared my tail with his right wing by about a foot. That was the first glimpse the pilot had of me. As soon as I saw he was clear, I yanked back the throttles and groundlooped to the right to avoid planes parked near the runway. Total damage done was one broken throttle cable.

Respectfully,
Lt. Comdr. USN"

Grampaw Pettibone says:

Looks to me like the tower operators weren't on the ball in this instance. At least it wouldn't have cost anything to try a radio warning to the P-47 or to you. A test hop requires great attention to instrument readings, but this certainly is no excuse for taking off without making sure that the runway ahead is clear.

Congratulations on getting out of the way.



TOMBSTONE

Here lies the bones
Of Ensign Dokes,
Who put on a show
For his home town folks.

DID YOU KNOW?

AD-2's Show Improvements Powerful Engine for the Skyraiders

The AD-2 *Skyraider*, built by the El Segundo Plant of the Douglas Company, is essentially the same attack bomber as the AD-1. The AD-2's, however, are equipped with a more powerful Wright 3350-26W engine resulting in considerable improvement in performance, particularly take-off.

Other changes include such items as a new rounded windshield for lower drag and improved vision, doors over the landing gear wheel wells for increased speed, aileron power boost, automatic cowl flap control, electric carburetor air door actuator, electric windshield degreasing system, and electric seat actuator with forward and up and down motion in general accordance with new aero-medical requirements.

In keeping with recent trends, the *Skyraider* -2's have the newly standardized cockpit equipped with edge-lighted plastic panel lighting, new console arrangements, hand crank rudder pedal adjustment, and control levers resembling the landing gear flaps and arresting hooks.

Many other minor changes have been made to improve the maintenance and increase the operational efficiency of the AD planes. The landing gear carry-



PATUXENT TEST PILOT STUDENTS EXAMINE AD-2

through structure has been increased in strength over the AD-1's to further reduce hard carrier landing troubles. The tail wheels and arresting hooks have also been improved to eliminate the difficulties experienced with the AD-1's.

The best method of identifying AD-2's from the AD-1's is that the former have rounded windshields and landing gear doors.

Mock Bombing Attack Made VA-6-A Takes Part in Demonstration

VA-6-A—Twenty seven officers and twenty enlisted men of VA-6-A recently flew 26 AD-1's to Selfridge Field, Detroit, to take part in the thirtieth convention of the American Ordnance Association.

In a demonstration of a carrier flight

deck launching operation, 24 AD-1's teamed up with 20 F4U's from VMF 461. The air group was completed by a group of 8 TBM's from the Naval Air Reserve Training Unit at NAS GROSSE ILE. A coordinated bombing attack was then made by the 52 planes on a target within full view of thousands.

One of the AD-1's, loaded with 12-5' HVAR's, 2-1000 point G. P. bombs and aerial torpedoes, was placed on static display to demonstrate the potential destructiveness of the mighty "Able Dog."

The squadron's availability was 100% for the entire period to give the maintenance crew a 4.0 record.

Scouts To Ride Navy Planes Orientation Trips Given Official OK

The Navy has outlined a broadened program of cooperation with Boy Scouts of America whereby accredited senior scouts now can make orientation flights in multi-engined aircraft.

Properly registered and accredited scouts can take these flights at the discretion of naval air commanders, provided prior approval of the Assistant Chief of Naval Operations for Air has been obtained in each case. The program also will permit taking such scouts on cruises aboard Navy ships.



Jet fighters come in all styles these days, with pointed noses or blunt. The F9F's above look like something out of the days of King Arthur with their special research airspeed indicator tubes in the nose, like the horn on a unicorn. The pitot tube on the Panther is on the rudder, about the same position as that on the FJ-1 between them in the picture

above. The Panther and Fury present two extremes of the Navy jet fighter stable in contours. The above picture was taken at Grumman factory by Harold G. Martin when an FJ-1 from Patuxent paid a visit to the plant. Parallel lines on the "chin" of the FJ are to aid the landing signal officer to check whether the plane has a proper landing attitude.

Marine Pilot Battles Hawk Mid-Air Melee Won by Corsair

MCAS, EL TORO—Ever share your *Corsair* cockpit in flight with a fighting sparrow hawk that periodically took hunks out of your leg with his sharp beak? Lt. Joseph A. Nelson of VMF-452 did when he flew off the *Bairoko* recently.

His plane captain told Nelson he thought he heard a scratching noise in the cockpit. Nelson sighted the intruding bird darting around the rudder pedals when he taxied to the catapult.

While the pilot was busy trying to take care of flaps, wheels and rendezvous, following the catapult launching, the angry bird attacked his leg, drawing blood. For 20 minutes the battle kept up with Nelson flying to North Island, trying to catch the hawk and fly the fighter at the same time. He finally trapped the bird and put it in the plane tool box, releasing it later when he landed.



92-TON GIANT BIGGEST PLANE TO CROSS NATION

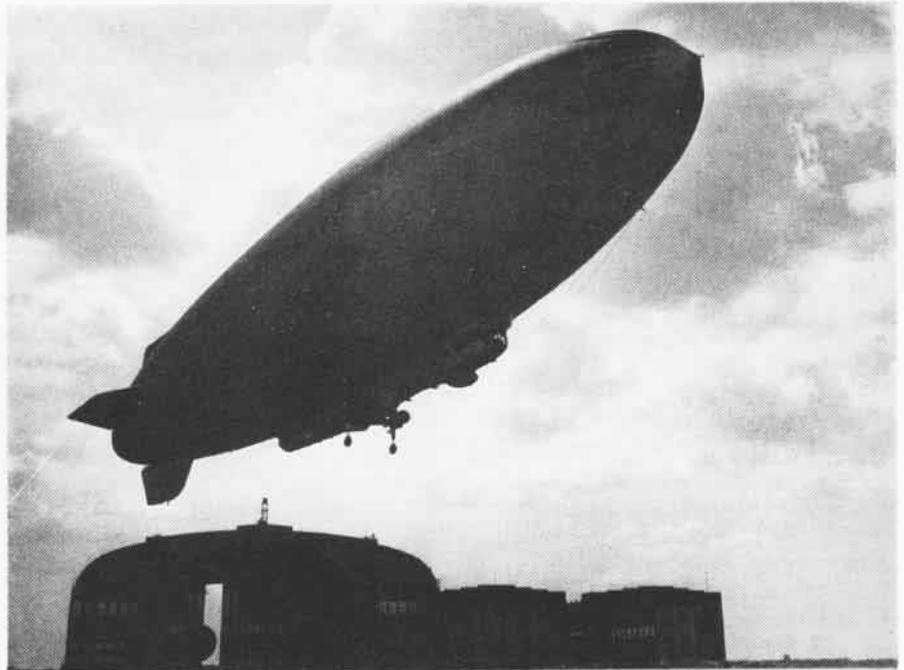
R60 Visits Atlantic Coast Lockheed Transport Commissioned

The Lockheed *Constitution*, largest landplane in the Navy's history, moved another step nearer its Navy acceptance when it flew across the continent and was officially commissioned at Washington, D. C., on 28 July. The flight took 10 hours and 19 minutes from Moffett Field, Calif., to the capital—2,600 miles.

The plane which flew east was the "plush job" #2 aircraft, since Lockheed built two of the huge transports for the Navy. Commander William M. Collins was at the controls. He has a 16-man crew to help operate the 168-passenger plane. Skipper of the #1 plane is Lt. Cdr. V. H. Larson. He has four officers and eight men under him. Both crews were trained at Lockheed.

After its visit to the East Coast, the #2 plane went back to the West Coast for another month's testing. Later both aircraft are scheduled to go to Patuxent River for two or three months of Navy testing before acceptance. The planes are slated to be turned over to the Fleet Logistic Support Wing, successor to Naval Air Transport Service, to fly.

Restricted



Recently modernized at NAS Lakehurst, the ZP-M2 is etched against the sky over blimp hangar. Among other things the old-type single landing wheel was replaced by a tricycle gear configuration. In this photograph the two main wheels are extended and the nose wheel retracted. The ZP-M2 is one of two non-rigid balloons of this type, which are the largest in existence. They are 302 feet long overall.

Alameda Hobby Shop Win Air Station Workers Take Honors

NAS ALAMEDA—Hobby shop members from this station took a total of 25 blue ribbons in the city of Alameda's hobby show, in addition to three cups for best individual projects, a trophy for the best complete shop exhibit and six first-place certificate awards.

The show was held to stimulate hobby craft in the area and the success of station personnel certainly did that for hobby shop activities. Mayor W. J. Branscheid of Alameda commended Charles Chaney, ADC, head of the shop, for exhibiting the best display of hundreds entered in the show.

Planes Cross Bow for Help World Distress Signal With Vessels

Rescue procedure to be used by aircraft trying to attract attention of ships to rescue downed personnel in the water is set forth in *Aviation Circular Letter 39-48*.

The system is standard for all planes on a world-wide basis. Planes will circle the vessel at least once, fly across the bow at low altitude, opening and closing the throttle, or changing propeller pitch, when possible. Then they will head in the direction of the distress scene.

This procedure will be repeated until the vessel acknowledges by following the plane. The aircraft will use the Aldis lamp, radio or message drop to explain the situation if possible. The

surface craft should follow the plane or indicate that it cannot comply by hoisting the international flag "Negat" or by other visual or radio means.

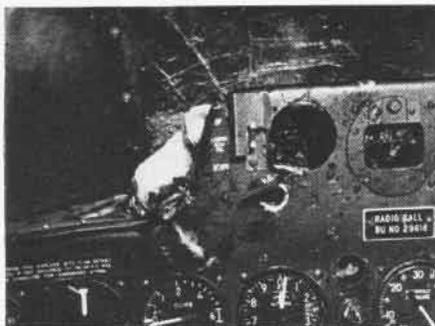
The value of this system depends on whether normal naval aircraft maneuvers around ships are such that they cannot be mistaken for a distress procedure. Naval pilots are directed not to simulate aerial attack on fishing vessels or other ships (except previously arranged targets) so that there will be no misunderstanding when a real distress "run" is made.

Seattle Links Get Static Training Is More Realistic to Pilot

VR-5, SEATTLE—Several innovations in practical Link training used by this squadron may be of interest to other activities in the light of the new directive requiring all pilots to have instrument cards.

Lt. (jg) J. E. Tilley, Link officer, introduced the ideas. One of the problems in an all-weather schedule has been pilot distraction from static. To acclimate VR-5 pilots to such conditions, considerable static, even to simulated lightning bolts, is fed into the Link system along with normal radio range signals.

A feature often overlooked in most Link training syllabi, the VR-5 Link course stresses proper flight clearances, position reports, and strict adherence to all traffic control instructions. A wire recording machine is frequently used to record two-way communications to aid the operator in pointing out pilot errors.



THIS IS THE HARD WAY TO GET DUCK DINNER

The Duck That Didn't Duck Grew Up To Become A Dead Duck

Another reason for knowing how to lower the landing gear manually is the tale of the duck which forgot to. The possibilities of both suicide and murder were investigated, but later thrown out. The duck appeared to have no motive for suicide, and Major F. E. Pierce, pilot of the SNB involved, insisted he cared very little about duckburger, especially raw duckburger, and he wasn't hungry anyway. So, the final conclusion was that either the duck had his eye on those wings of gold, or else he just plain forgot he was a duck—and didn't.

The damage incurred to the landing gear switch necessitated a manual gear lowering operation. The Major, bloody but unbowed, made a nice landing at NAS SAN DIEGO.

Hop Sets Record, But Cold VR-8 Men Find Oxygen Necessary

NAF HONOLULU—Some interesting sidelights of high-altitude flight were reported by crew members of the VR-8 flight which set a record of nine hours and 23 and a half minutes from Honolulu to Moffett Field.

The plane flew between overcast and undercast at 17,000 feet. Crewmen who wanted to smoke were out of luck—no one could get any taste or sensation out of cigarets or cigars. The rarefied air made it impossible to keep the stogies lighted. Matches extinguished as soon as the sulphur was consumed.

Flight Orderly L. H. Burbo, S1, was found sitting on the edge of his bunk with his oxygen mask off. His foot kept slipping off the bunk and he would pick it up and put it back again. When he continued the ritual and failed to recognize his mates, someone slapped the mask back on him and restored his wandering faculties.

When the plane approached the mainland, crew members began to think of shaving and brushing their teeth in preparation for any social activities they might run into. Their good resolve went for naught—all the toothpaste and shaving cream was frozen solid.

Pilots Get Photo Training Jax Gives Rudimentary Knowledge

NAS JACKSONVILLE—Naval aviators finishing advanced training here are given a rudimentary course in aerial photography which condenses the 600-hour photo course at Pensacola to 10 hours of work here.

Several flights of student pilots each day attend classes given by Lt. (jg) H. T. Crain, Robert Koser, CPH, and R.



CAMERA TECHNIQUES ARE EXPLAINED TO PILOTS

C. Keller, CAP. Each flight averages from 12 to 24 pilots.

Purpose of the condensed course is to familiarize fliers with fundamentals of photography in the event of future photo-reconnaissance flight assignments. Included in the course are lectures on history of photography, materials and solutions, lenses, shutters and exposures, camera repair and printing, aerial cameras, mosaic map planning, flying aerial maps, assembling the mosaic and photo interpretation.

The course does not stress any one phase but gives the student an overall view of both single-engine and multi-engine picture problems.

Hawaii Rescue Wins Praise NATS Ferry Pilot Helps Save Fishers

VRF-2, HAWAII—A ferry pilot attached to this squadron recently received a letter of commendation from Chief of Naval Personnel for helping rescue three fishermen clinging to a capsized 14-foot motor launch in shark-infested waters of Kaneohe Bay, Hawaii.

The man was Lt. (jg) Alvin L. Clark. Others in his party were Lt. John W. Chalkley, T/Sgt. Raymond Sundsuth and Pvt. Joe L. Thiers. After rescuing the three men, the party salvaged the motor from the overturned boat and took the men to NAS KANEHOE for medical treatment.

Another member of the ill-starred party tried to swim to Kekepa island, a mile away. Clark's group notified the Kaneohe crash boat, but it was unable to rescue the man because of heavy seas and shallow water near the island. Clark and his mates pumped water from their boat and after several attempts rescued the marooned man from the island, a new type of ferry job.



Take three football fields and add a 100-yard track, place them end to end and you have the flight deck of the new 65,000-ton carrier to be built by the Navy. The silhouettes above give an idea of how it compares to operational carriers now in the fleet. Actual shape of the big carrier has not been divulged.

Marines Lick Stove Worry Field Maneuvers Show Weaknesses

SMS-33, EL TORO—The lowly field tent stove, which usually does not rate much attention in this technical age, can help make a field maneuvers bearable or uncomfortable, according to how it is used.

This oil-burning gear can burn you out of your tent if not operated with proper respect. Personnel during recent maneuvers at Camp Pendleton would turn the stove up to "high," making it cherry red. In pyramidal tents, the smoke stack must go out the top of the tent, which puts the pipe near the tent pole, often dry. A fire menace soon arises. To remedy this, several sections of stove pipe were placed around the tent pole and filled with sand.

Another problem arose now that this service squadron is preserving stoves for future use. They were placed in operation before the original preservative had been removed (stock #R14-C-650) and now it is found that this preservative is cooked to the side of the stove and many man-hours are spent removing it.

It is recommended that if time permits, this preservative should be removed by dipping several times in kerosene. This would avoid conditions such as this command found when the time came to represerve the stoves.

Personnel should be checked out on the right way to assemble and operate the stove. Some parts were bent and assembled wrong through failure to read instructions carefully. Also, small explosions resulted from too much fuel being in the bottom of the stoves when lighted or turning the fuel on when the stove was still warm from previous use. The stoves proved satisfactory down to 26° F. for pyramidal tents. It is believed that they are the answer for moderate weather operations in the field.



FAIR PHOTO FAIR MODELS POSE FOR MARINES

Marines Stage Fine Exhibit Win Praise at Los Angeles Fair

MCAS, EL TORO—The photographic activities of the Marine Corps Air Station, El Toro, joined forces to put on an aviation photography exhibit at the Photo Fair held in Los Angeles during the latter part of June. This was the largest photographic show ever set up in southern California.

Marine Photographic Squadron 254 placed on display many of their aerial cameras as well as examples of their work. A mosaic map and several pin-point photos of Los Angeles, especially prepared for the exhibit, attracted much attention.

The station photographic laboratory and the public information office of the First Marine Aircraft Wing handled the ground work, displaying numerous still and motion picture cameras.

Functions of the various cameras were explained by Marine photographers to thousands of camera fans, many of whom claimed this exhibit to be the most interesting in the show. The admiration of these fans was also captured by the photographic trailer, which was supplied by the squadron.

VMPP-254 was represented by 1st

Lt. Thomas E. Mulvihill, M/Sgts. Harley Hardin and Clayton L. Jansson, Cpl. Wilford Parsons and Pfc. Edwin Kron. Pfc. Norman Armstrong was the station photographic representative. The exhibit was under the direction of VMPP's PIO, Maj. Frank Smyth, assisted by T/Sgt. Fred G. Braitsch, Jr., and Pfc. Frank Zabrowski.

In the picture with models Barbara Kelly, Joyce Bleitz and Scotty Reynolds, are Hardin and Jansson.



AIR MARINE DISPLAY AT EXHIBITION WAS TOPS

Pilot Ignores GCA Waveoff Nearly Wrecks R5D in Landing

A GCA approach made recently at Tsingtao which easily could have resulted in a fatal accident points out a moral all pilots should heed.

An R5D made the approach under actual instrument conditions. The final leg was above glide path, so the GCA controller gave the pilot a wave-off. He had sighted the runway, however, and decided to land.

He came on in, leveled off and floated, and floated, and floated. His touchdown point was past the halfway mark of the runway and maximum use of brakes was all that saved him. He blew out three tires, but he might have lost all hands.



Admiral W. H. P. Blandy, Cominch, Atlantic Fleet, inspects an FH-1 at Quonset Point during a tour of the station. Cdr. Hawley Russell, CAG-17, checks him out on cockpit while Capt. D. F. Smith, commanding officer, watches.

New GCA Unit in Aleutians VR-5 Welcomes Cold Bay Radar

VR-5, SEATTLE—Pilots of this squadron, which flies the Aleutian run, are welcoming installation of a GCA unit by the Army at Cold Bay, Alaska.

The small number of suitable alternates and the distances between terminals and alternates are problems which bother VR-5 pilots. The closest suitable alternate for Adak is Shemya about 400 miles away. However, the pilots have been reluctant to go further out on the chain because of the rapidity with which weather changes. It has therefore been the practice to use Kodiak as an alternate on Adak flights. Since most flights are turned around approximately abeam of Cold Bay, the new GCA unit will greatly aid operations. No minimums have been established, but since the Bay has a 7,400-foot runway and unobstructed approach, they may be lower than present range minimums. Cold Bay is two-thirds of the way between Kodiak and Dutch Harbor.

NEW FLYING BOAT IN TEST STAGE

SHOWN here at slow taxi speed and at near hump speed, the latest Martin flying boat, the XP5M-1 is still undergoing preliminary testing. With so much of it sitting in the water the flying boat appears to be hull down and unhappy. However, it isn't a case of the tunnel hatch being left open; "she's just built that way."

Though the hull has a new look, it is of fairly conventional design. The only radical departure from past Navy boat design, is the long narrow afterbody which runs all the way aft from the step—which is in the same old location. Contrary to usual practice, the afterbody is longer than the forebody. The plane has a medium length/beam ratio.

The additional length is expected to cut down porpoise and skipping tendencies as well as a good percentage of hydro-dynamic drag found in some conventional hulls. Note from the photograph of the plane at hump speed how the extended hull keeps the tail high in the water even during take-off run. One other big advantage to having that long tail in the water: that sinker of big boats, the tunnel hatch, is eliminated. There are thus fewer things that can go wrong.



CV's Spearhead Defense

AIRCRAFT carriers spearhead the Navy's striking power today and will deliver the Sunday punches in a war of the future, Vice Admiral Arthur W. Radford said in a recent speech at the Diamond Jubilee of the Chautauqua Institution.

"This does not mean the Navy has become lopsided," he cautioned. "The Navy today is a balanced fighting force of submarines, surface ships, aircraft and amphibious forces."

"Seapower, like seawater, is a slippery concept . . . Superficially, the atom bomb and long-range planes appear to have removed all the complexity from war . . . We in the Navy realize that this is not so simple.

"Effective warmaking still involves brains and cunning. Deception, surprise and wily maneuvering to confound and dismay the enemy are essential strategic ingredients. In our modern carrier task forces we have the supreme embodiment of the cunning warrior.

"Without warning a carrier task force can appear over the horizon and unleash a devastating thousand-plane attack. After hurling its thunderbolts, this same force can swiftly disappear before the enemy can rally enough forces for a counter attack. Within 24 hours such a force can be anywhere within a radius of 600 miles, within a

circle having an area of more than a million square miles. An enemy can locate six needles in as many haystacks as readily as he can find that striking group."

Admiral Radford cited the effective record of carrier task forces in World War II when the Japanese in many months of combat with carriers could sink only 11 of the 110 in the U. S. Navy. Not a carrier was lost and only 13 damaged in the 90-day Kamikaze onslaught by 8,000 planes off Okinawa.

"These statistics are understandable in the light of task force organization," he said. "A carrier task force, protected by its fighter planes and by a deadly concentration of shipboard antiaircraft fire, is the most heavily defended target that an enemy air force can tackle. The aircraft carrier is about as vulnerable as a jet-propelled porcupine who can combine his natural offensive powers with the fleetness of a rabbit.

"Push button warfare still belongs in the realm of fantastic magazine stories," Admiral Radford declared. "Intercontinental aerial warfare is still a vision, not a reality. Until our designers can stretch the range of bombardment aircraft, land aircraft must operate from advanced bases established abroad. We do not have such bases today.

"To acquire them by diplomatic nego-

tiation is a risky process which can increase existing tensions and misunderstandings. Peacetime acquisition of advanced bases wears a martial aspect.

"If war breaks out we will again resort to amphibious warfare to seize advance bases for the use of the Army and the Air Force. Probably friendly nations also will invite us to base on their territories. But even such easy and fortunate acquisitions are time-consuming. The bases must still be built and supplied. Meanwhile, how could we engage a military adversary? Who would deliver the retaliatory attacks to slow down the enemy and buy time?

"Your Navy's policy is strictly similar to the policy of a reputable life insurance company. In case of disaster, we pay off immediately. Overnight we could establish a floating airbase on the high seas anywhere in the world. This means that our planes can arrive at the right spot, with fresh crews, full military equipment, and fuel tanks still chock-full of gasoline.

"Although the Navy's primary mission is to seek out and destroy enemy naval forces and to suppress enemy sea commerce, our carrier forces are capable of striking deep into an enemy hinterland. Ninety-two percent of the targets of any importance in the world lie within 1200 miles of salt water. Any target in the world lies within 1,500 miles of carrier-based aircraft."

Strange Cargo from Africa

SOME strange cargo recently arrived at Patuxent from Africa via NATS.

Aboard, among the usual mixed load of passengers and cargo, were 104 giant elephant shrews. *Encyclopedia Britannica* describes this little animal as "any of numerous small mammals of the family Soricidae, mouselike in form, but belonging to the order Insectivera and most closely related to moles. Among them are the smallest of all mammals, some being scarcely two inches in length. They have a long pointed snout, very small eyes and velvety fur. They are mostly nocturnal, feeding mostly on worms and insects." The elephant shrew is further described as "any of several leaping African shrews having the nose long and flexible like a proboscis."

This small creature may become a friend of man. It seems the giant elephant shrew (about the size of an anemic rat) catches malaria and reacts to it as warm-blooded creatures like humans do. The 104 which have arrived are believed to have malaria.



Chief Lawless, Mr. Terry, Cdr. Ruebush, Dr. Huff, Capt Sapero with shrews

The animals were requested by Dr. Clay C. Huff, chief parasitologist of the Naval Medical Research Institute at Bethesda. They are to be used in an attempt to transmit the disease to large animals for laboratory use. Except for humans—unhandy creatures—it seems the scientist had nothing to work on until now.

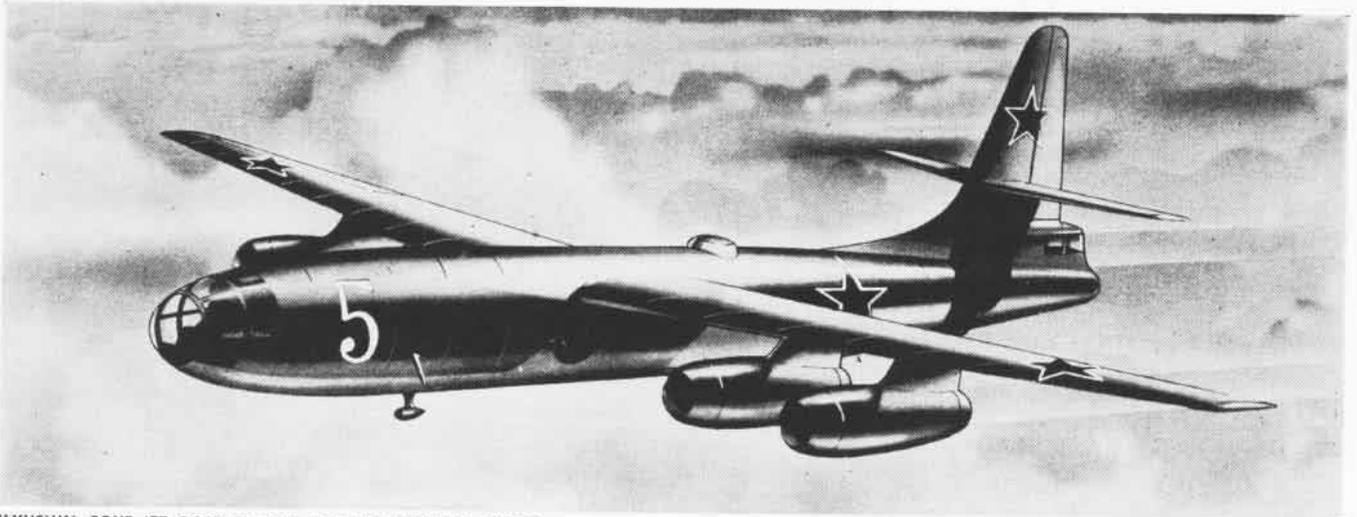
Accompanying the 104 shrews were three members of the North African

Expedition of the University of California, in which the Navy was participating, namely Cdr. Trenton K. Ruebush, MC, Deane K. Lawless, CHM, and William B. Terry, field executive of the university.

Big problem in keeping the shrews alive was feed. Of the first 87 captured, 80 died. Of the next 94 captured, all have so far survived. The initial 7 became quite fat and lazy and seemed not to mind in the least the handling Chief Lawless gave them. The chief, who said the natives eat shrews, was gradually working his shrews' diet from insects—grasshoppers, ants, termites—to more easily obtainable foods. He had success with dried meat, porridge, and hard-boiled eggs.

Milk, tea and cheese, which the shrews also like, will be offered to them at the Washington National Zoo, where they will live. Research scientists from nearby Bethesda will come there to study them.

The shrews are apparently good air-men. They survived handily an altitude at one time of 12,000 feet, though Chief Lawless said their breathing was somewhat labored at that time.



ILYUSHIN FOUR-JET BOMBER HAS ENGINE NACELLES SLUNG UNDER THIN WING, SOMEWHAT LIKE BOEING XB-47; TAIL TURRET RESEMBLES B-17

Русский Военно Воздушные Силы

OR Russian Air Force

ON JUNE 22, 1941, a supposedly invincible Luftwaffe spearheaded the panzer units which initiated the third Reich invasion of Soviet territory. Four years later, at the end of the European war, the German Air Force had taken disastrous punishment under the unrelenting attacks of a Red Air Arm which had grown from what was believed a second rate air force to a powerful weapon equal to the other mighty weapons produced to help bring the downfall of Germany. If there is any one reason for the unexpected reversal it lies in the sound military foundation upon which Russian aviation activities are based.

In the early 1930's aviation research and development were centralized as a portion of the famous Five Year Plans. Initial efforts concentrated on the adaptation of foreign designs and techniques to Russian requirements, but a trend toward individualism began to manifest itself almost immediately. The principles upon which Russian air might was developed were published in 1935; an independent air force, intensive air-ground cooperation, and coordinated command responsibilities for air and ground units.

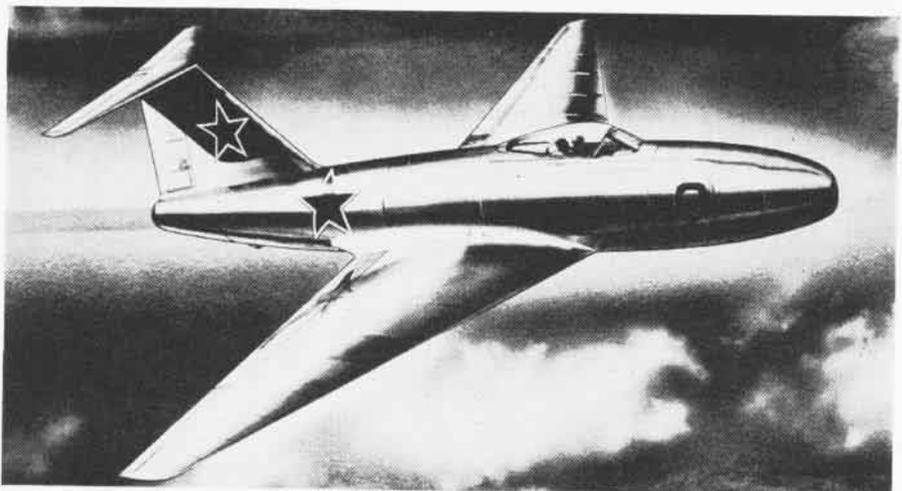
This early concentration on ground support activities and the immediate development of close-cooperation aircraft strongly implies that the Russians had correctly identified their potential enemy at this early date. Immediately an exhaustive study was begun as to the best manner by which Germany's offensive weapons might be overcome.

A first-hand knowledge of German military equipment, coupled with the obvious fact that Germany would have to over-run a tremendous land mass to conquer Russia, served as a clear indication that German land effort would be concentrated on armored warfare. In order to realize the doctrine of air-ground cooperation and thus overcome the expected onslaught, Red engineers decided to adapt all available air strength to ground attack duties.

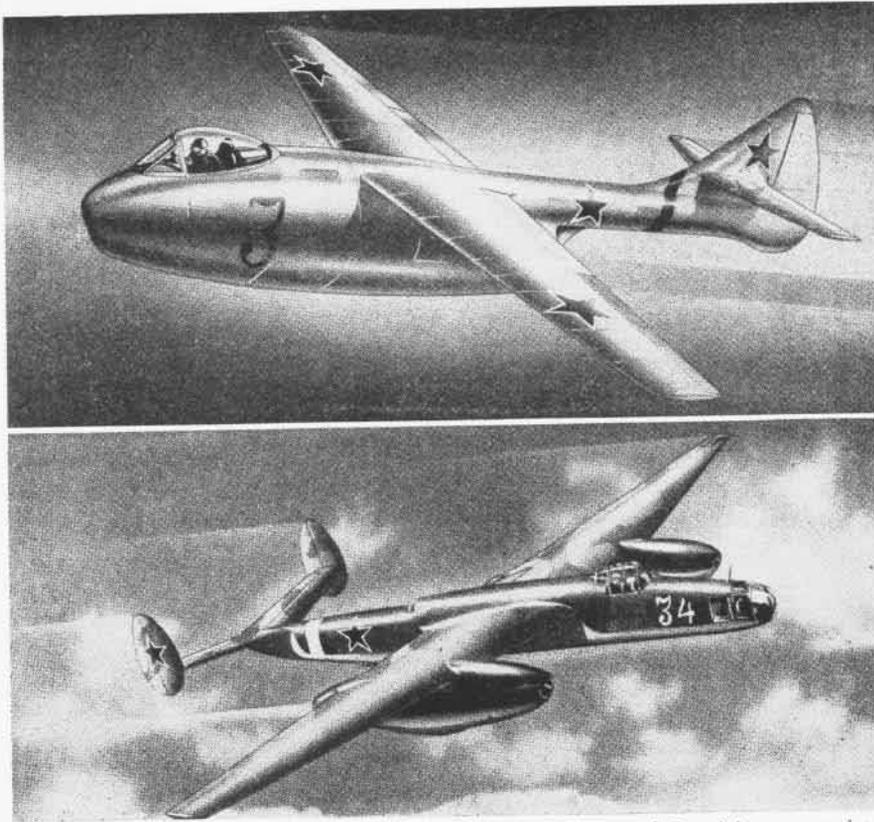
Fighters were equipped with bomb racks, and cannon were mounted on single engine planes. Efforts to overcome the problems of recoil and weight associated with mounting heavy cannon on light weight aircraft resulted in exhaustive research in the tactical uses of the rocket.

The lend-lease airplanes most favored by the Russians were the P-39, P-40, P-51, A-20 and B-25, all of which are good performers close to the ground. The pace of Russian technological development was sharply increased to keep step with the pressing needs for up-to-date fighting equipment. Designs were standardized and mass production of a limited number of types was inaugurated. Today the emphasis is on jet aircraft, just as with the United States. Photographs on these pages show in as much detail as possible what is presently known about newer planes the Russians have shown the public.

THE SOVIET Air Force has two branches; the Army Air Force consisting of a number of Air Armies, and the very small Navy Air Force. Each of these is controlled by the Army and the Navy respectively, and employs the same types of aircraft with suitable



RUSSIAN VERSION OF GERMAN DFS 346 JET RESEARCH FIGHTER; NOTE SWEEPED WINGS, HIGH TAIL



Mikoyan single jet fighter (top) is reported to be one of Russia's newest jets; its nose resembles a Navy FJ-1 but the chopped off jet orifice helps recognition **Tupolev's** twin-jet bomber, based on the design of the TU-2 on facing page, is another new Russian design; big nacelles apparently house centrifugal-flow engines

modifications. The Air Armies form the bulk of the Soviet Air Force and are entirely employed in support of ground forces, their activities being confined to battle areas only.

There is also a Soviet Long Range (Bomber) Force, not designed as a strategic bombing force as understood by us. Although under separate command from the Air Armies, it has seldom operated in a strategic capacity, and is used chiefly to support ground forces. There is reason to believe, however, that there will be increased emphasis on the use of long range bombers as strategic weapons.

As was mentioned previously, with few exceptions Soviet aircraft have been designed for the close support of ground troops. In fighters, emphasis is upon low altitude performance and lightness of structure weight. Armor and equipment have been kept to a minimum, except in special cases where aircraft have been designed for definite purposes. Generally speaking, the aircraft have good maneuverability. Several jet fighter types have been observed recently and it is apparent that there are a number of advanced types in mass production. It is also believed that they have been using a number of German aircraft including the ex-Luftwaffe's latest jets.

A large part of the German aircraft

industry, including a large portion of its most famous component constructors fell into Soviet hands at the end of the war. Arado, Blohm and Voss, Dornier, Focke-Wulf, Heinkel and Junkers concerns were among those which contributed plant, scientific and technical manpower and many plans of projected jet and rocket-powered military planes.

Reports coming in from behind the "Iron Curtain" also indicate that the Soviet Union has copied our B-29 *Superfortress*. How many aircraft of this type they have in service is not known but it is reasonable to assume that they are in mass production. Other reports indicate that there are at least one four-jet bomber type and one two-jet bomber type now flying. The only noteworthy bomber produced by Russia during the war was the twin engine TU-2. Others were merely modifications of earlier designs.

Originally designated by an abbreviation of the task for which they were designed, Russian aircraft are now known by an abbreviation of the designer's name, followed by a number to indicate the model. The numbers do not necessarily indicate the vintage; e.g., the YAK-9 appeared before the YAK-3. The most prominent Russian designers are Yakovlev (YAK), Lavotchkin (LA), Petlyakov (PE), Ilyushin (IL), Tupolev (TU), and Ermolaev (ER).

RECOGNITION

VIEWED as a group, most of the current planes of the Soviet Air Force possess certain salient characteristics which are sufficiently obvious and distinctive to define a Russian aircraft design. In part this is due to the national touch which leaves its mark on all handiwork. One can distinguish a British car from an American car at a glance; Russian aircraft have added kinship because they are designed by a mere handful of engineers, perhaps only three or four at the top, who work closely together and sometimes will evolve a new design as a committee.

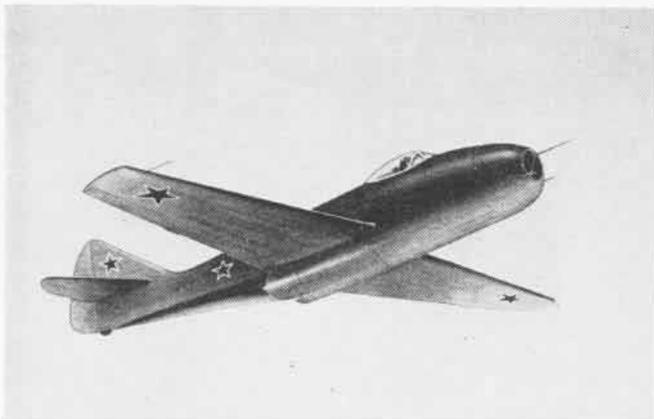
It also is known that many German aircraft factories are in the Soviet occupied territory, and coupled with the fact that some of the best designers of German aircraft are now working for the Soviet Union, it is reasonable to assume that many of the future Russian aircraft that make their appearance in the next five years will show strong German influence.

Soviet aircraft designers do not seem to be prolific or radical in designs, but much modification to existing types is carried out. In some instances, they have followed well-tried and proved foreign designs.

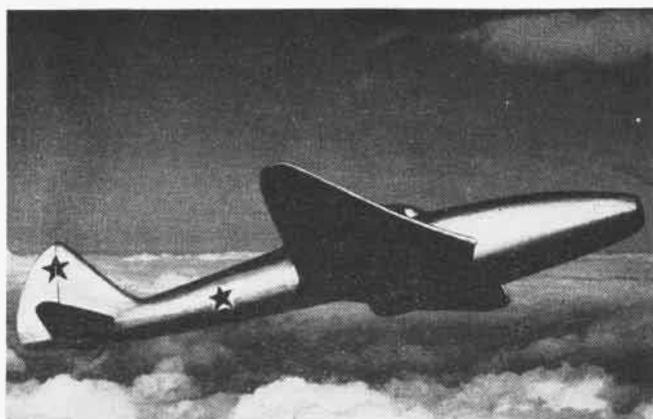
The camouflage scheme for opera-



- ME-262** One of Germany's best wartime jets was this aircraft
- HE-162** Heinkel's jet placed engine in odd spot on top fuselage
- ME-163** Messerschmitt's single-jet was copied by the Japanese



MIG JET HAS TWO ENGINES, PROBABLY BMW 003, RESEMBLES ME-262



YAKOLEV JET HAS SIMILAR APPEARANCE TO MIG, WITH SLEEK LINES

tional aircraft is grey on the upper surfaces and pale blue beneath. Five-point yellow stars, bordered in white, replace the red star found on non-camouflaged aircraft. Squadron symbols may be painted on the fuselage and tail fin.

The Mig 7 jet is a result of joint efforts by designers Mikoyan and Gurevitch. It is probably powered by two German BMW 003 turbojets, each of 1,750 pounds thrust. Some of the Mig jet's structure resembles the Messerschmitt Me 262 fighter on the opposite page, particularly in side view, in tail-unit configuration, and in fuselage cross section. This, however, is not necessarily evidence of German assistance in designing. Best recognition feature of the jet is the step in its hull-like fuselage. Maximum speed is believed to be around 600 mph.

The Yak 15 jet also has this chopped-off step in its fuselage. Its wings and elevators and the "leaning forward" fin and rudder closely resemble those of the Yak 3 and Yak 9 piston engine fighters. In fact, it looks like one of those aircraft with a turbojet faired to and beneath the forward end of the fuselage. Span is about 32 feet, smaller than U.S. fighters. Performance figures are unknown, but its sleek appearance would indicate it could be well into the 500-mph class with other operating jets.



TU-2 WAS REDS' BEST PISTON-ENGINE PLANE



YAK-9 TOUGH FIGHTER WITH 370 MPH. SPEED



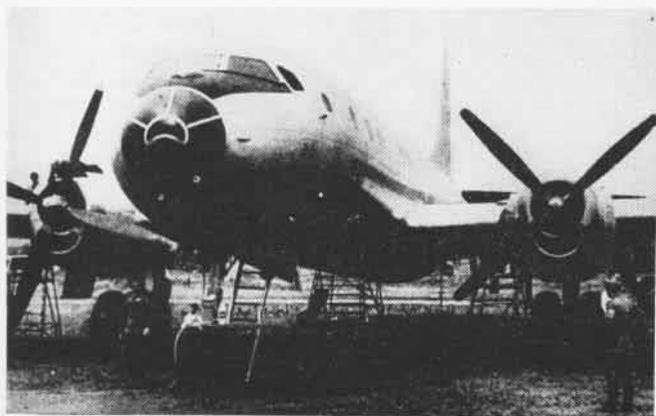
LA-5 FIGHTER BUILT TO COMBAT THE FW-190

The TU-2 (left) was a prize-winning design which won Tupolev a medal. It was the only Russian bomber designed during the war. Speed was 340 mph maximum.

CONCLUSION

Russian aviation in particular, like the Soviet Army in general, has been proved a powerful weapon and one which is in a constant state of development. It is reasonable to assume that there will continue to be major improvements throughout the next five years—probably along these lines:

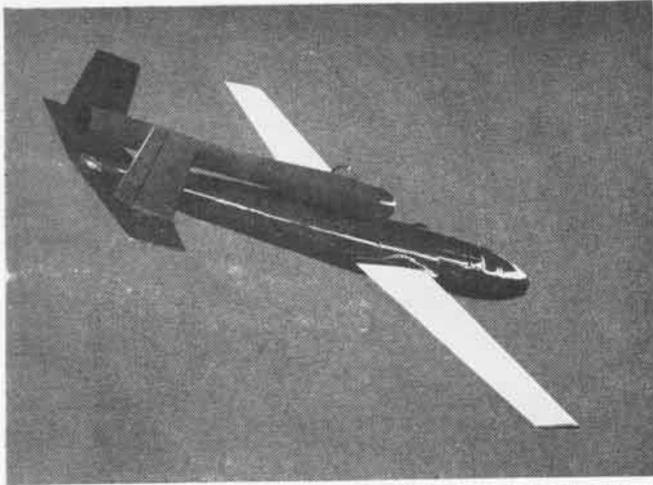
1. Increased horsepower in small powerplant and elimination of heavier and older types.
2. Further development of plywood aircraft in search for a lower weight-strength ratio.
3. The appearance of new heavy bombers for high altitude and long range operations.
4. The development of jet propelled and rocket propelled aircraft of their own design and from designs of German types.
5. Increased emphasis on strategic type bombers.



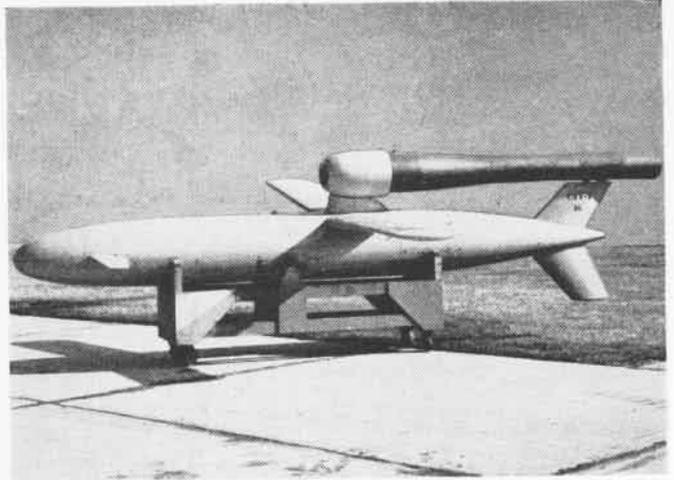
THIS IS THE TU-70 TRANSPORT BELIEVED COPIED FROM BOEING B-29



FLIGHT VIEW OF TU-70 REVEALS SIMILARITIES TO B-29 SUPERFORT



KD2G TARGET DRONE BY GLOBE CORP. IS POWERED BY PULSEJET ENGINE



THIS GORGON-II-C IS EXPERIMENTAL VEHICLE FOR TESTING CONTROLS

PUTT..PUTT..PUTT

THE PULSEJET engine, famed power-plant of the German V-1, is still receiving considerable investigation, and some practical application in the Navy today. It is used to power target drones and experimental vehicles, and in any future conflict would be used for certain types of guided missiles.

A simple engine, the pulsejet is only slightly more complex than the ramjet (NANews, February). It can be constructed of non-critical material and could be produced at low cost. The price of a pulsejet engine, capable of powering a vehicle weighing from one to two thousand pounds, in mass production, should be no more than \$300, each—about the cost of a model "A" engine.

Main components of the pulsejet are the tailpipe, a combustion chamber, a flapper-valve bank which opens and closes by suction, and pressure demand and an inlet diffuser. Ram air enters the wide diffuser mouth goes through the restricted throat and into another enlarged chamber.

Pressure builds up in this chamber because of the ram air and opens the flapper-valves letting the air rush into the combustion chamber, which is immediately aft of the valve bank. The diameter of the tailpipe is smaller than the combustion chamber and thereby restricts the airflow of the combustion chamber. This builds the combustion chamber pressure up, which in turn closes the valve gates.

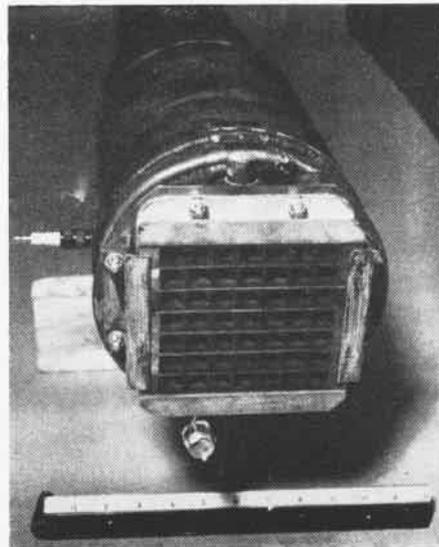
Fuel injection and burning is continuous in the combustion chamber, after initial ignition. The combustion of the new charge of air raises the pressure much higher and forces the air and gasses through the tailpipe at high velocity. The high speed exit empties the combustion chamber, lowering the pres-

sure. The valve gates then open again, ram air rushes into the chamber and the process is repeated. This cycle occurs from 40 to 230 times per second depending upon the size of the engine.

Initial combustion is set off in the chamber by a spark plug and thereafter residual burning sets off each additional charge of air mixed with fuel that comes into the combustion chamber.

Some of the drawbacks of the pulsejet are its high fuel consumption, the short life of the flapper-valves, the tendency of the tailpipe to split from rapid pressure fluctuation and the restricted speed and power efficiency range for any one particular engine.

The pulsejet uses about twice the amount of fuel for the same power as the turbojet. This is partially due to the continuous fuel injection system which it uses. The rapid opening and closing of the flapper-valves, plus the high temperatures—around 3000°F.—



VALVE BANK OF MCDONNELL 8-INCH PULSEJET

in the combustion chamber cuts the life of the flapper-valves to approximately one hour of operation. That is long enough for a one-way trip but requires constant replacement on vehicles that are controlled and re-used.

The pulsejet has static thrust. However, an installation which is designed for the most efficient operation at a predetermined speed, suffers reduced static thrust and inefficient operation at other speeds. This is true of the pulsejet because the flapper-valves must be adjusted to open and close at certain pressures depending upon the missile's intended speed and the ram air pressures to be expected at that speed.

Although the pulsejet can be designed to operate efficiently at a variety of speeds, each individual engine is a single speed affair. For this reason most pulsejet-powered vehicles are catapulted to get up to the operating speed as rapidly as possible. The best design speed for today's pulsejet engine is around 300 mph. Development going on now is expected to raise this speed and make the engine more flexible so far as speed is concerned.

THE GERMAN V-1 was slower than the modern pulsejet and was relatively easy for high speed interceptor aircraft to shoot down. Today's turbojet planes and modern reciprocating engine fighters have a large enough speed advantage over the pulsejet to make it easy prey. However, the V-1 type missile can be a very nasty weapon when used at short range and in quantity—as the British will readily testify. The Navy recently fired it from a sub deck and a V-2 bomb from the *Midway*.

At present the pulsejet is used on the *Loom*—an experimental vehicle developed by the Air Force based on the German V-1—and on a number of pilotless aircraft drones.

The Air Force, NACA and the Navy are all doing research on the pulsejet.



TAXI ACCIDENTS

THE FLIGHT Safety Spotlight is focused on a group of accidents which are not sensational but which occur with surprising regularity. Just about 99% of these accidents are caused by pilot errors of carelessness and negligence. As shown in the table below, a taxi accident occurs somewhere in the naval air organization almost every day. Fortunately most taxi accidents do not result in fatal or serious injuries to personnel. Unfortunately they often put two planes out of commission. In the past 15 months 22 airplanes were destroyed in taxi accidents, 23 were damaged so severely as to require a major overhaul, and 176 required major repairs. In the remaining 230 taxi accidents the planes involved required minor repairs.



	All Accidents	Taxi Accidents	Percent of Total
January-March 1947	727	122	17%
April-June 1947	710	90	13%
July-September 1947	616	95	15%
October-December 1947	427	58	14%
January-March 1948	539	76	14%

The two cases listed below are typical:
Case #1. The seventh plane in a flight of 12 Corsairs suf-

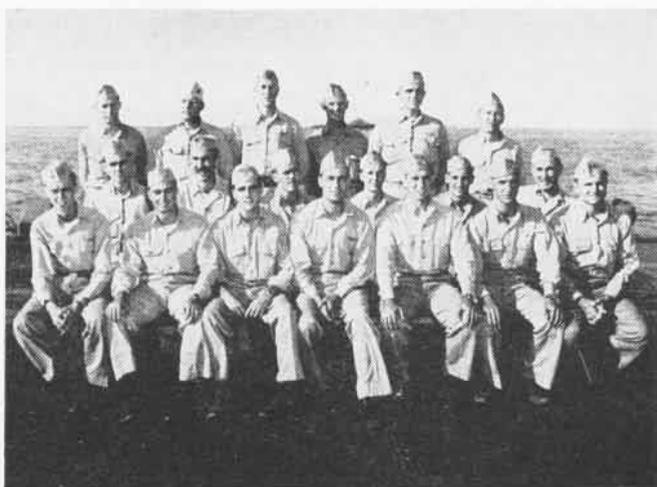
fered a flat tire after turning off the duty runway. The pilot taxied slowly from the center of the runway to the right hand side where he attempted to warn the planes behind him by radio. The pilot of the eighth plane had turned into the taxiway by this time and was admittedly taxiing fast, although he states that he was "S" turning. He did not see the plane with the flat tire until about 70 feet away, at which time he applied full brake, but was not able to stop before hitting the other plane. Damage to the tail and after section of the parked plane was so great that it was recommended for a strike. The accident board was of the opinion that both pilots were at fault. When the pilot first discovered that he had a flat tire he could have safely taxied off the runway instead of merely to one side. The pilot of the overtaking aircraft was taxiing at an excessive rate of speed. Since he knew there were other planes in front of him he should have maneuvered his plane so as to have them in sight at all times.

Case #2. Shortly before midnight the leader of a three plane flight of F4U's started to taxi out for take-off. As he rolled along he made a recheck to see that all the switches were in the bright position. At this time he noticed that his wing lights were not burning. Thinking that he had inadvertently moved this switch to the wrong position, he continued to taxi along at low RPM, checking his light switches. When he realized that the switches were in the right position and his lights were still not on, he started a turn to put himself in position to signal the planes behind him with his flashlight. Just at this moment the number 2 plane over-ran him and completely demolished the tail section of his F4U.

The Accident Board believes that this crash could have been prevented if the pilot had turned off the runway or warned the other planes by radio when he saw that his lights were out. Either choice would have prevented an accident.



OFFICERS OF VT-29 LOOK OVER LT. STAGGS' NAVY CROSS CITATION



HAPPY WARRIORS POSE FOR A PICTURE TO PUT IN WARTIME ALBUMS

TORPEDO SQUADRON 29

TORPEDO Bombing Squadron Twenty-Nine, designated originally an escort bombing squadron, first saw action in North Africa 8 November 1942 when it was assigned to cover, from the deck of the USS *Santee*, the amphibious landings at Safi, French Morocco.

Manning new *Avengers* and SBD's, the squadron, skippered by Lt. Cdr. J. A. Ruddy, supported the invasion vigorously, but there was practically no opposition to challenge them. Although targets were few and far between, the squadron carried out its mission, bombing airfields and strafing enemy troops. Lt. W. R. Staggs was credited with sinking one submarine. For the excellence of their work, Lt. Cdr. Ruddy, Lt. Staggs and Lt. Ershler received Navy Crosses.

Late in the afternoon of the 10th, landings were made on an emergency airfield at Safi because weather prevented the squadron from returning to ship. In terms of planes, this was a major catastrophe as only one TBF and two SBD's were able to land safely on this field of mud called an airstrip. Pilots and crews were unscathed.

Upon its return to the United States, the squadron was sent on its second tour aboard the *Santee* and headed for Recife, Brazil. There members of the squadron began on 15 January 1943 their career as airborne detectives detailed to foil German blockade runners and submarines.

From February 15th to 20th, the squadron took time out at Recife. The appearance off the coast of Bahia of a U-Boat on the 20th sent the squadron scurrying there to aid in the search. The results were negative, so VT-29 returned to the *Santee* and started another series of searches for German raiders.

On 1 March the unit was designated Composite Squadron 29.

March proved to be the most successful month of the cruise. On the 10th, Ens. Earl Lock sighted a German ship and signalled the USS *Savannah*. But before the *Savannah* could open up, the German crew scuttled their ship and took to the lifeboats.

On the 16th, Lt. (jg) Koos sighted a U-boat and embarked on a running fight which cost him a wound in the leg. When two fellow pilots arrived to help out, the U-boat submerged to escape further damage. Koos was credited with a kill.

THE SQUADRON returned to Norfolk the end of March, and on April 13th, Lt. Cdr. Staggs assumed command. From early April to June 13th, the squadron received specialized training in antisubmarine warfare. Then, again on the *Santee*, the squadron set sail to escort a convoy to Casablanca.

Departing from that port July 7th, VT-29 set out on a "pig-boat" hunting assignment, routine searches over areas thought to be infested with underwater raiders. So highly successful was this period in the history of the squadron that several of the pilots would be well qualified to lecture on "The Sport of Shooting Surfaced Submarines." The frequency with which Twenty-Nine found its prey floating fat, dumb and happy on the waves of the Atlantic provides verification of the saying that truth is stranger than fiction. There they were, and there above them were the ASW pilots who knew what to do and did it!

On July 14th at 0810, Lt. (jg) J. H. Ballantine, Jr. and his crew spotted a surfaced U-boat 20 miles ahead. Bal-

lantine and his fighter partner, Lt. H. Brinker Bass, closed in for the attack. Two strafing runs were made by the fighter before the U-boat crash-dived. As soon as the dive started, Ballantine attacked. An oil slick rose to the surface. Assessment: a kill!

The next day Lt. (jg) Claude Barton and his crew in a bomber and Ens. Jack B. Anderson in a fighter spotted another surfaced submarine. Anderson immediately made four strafing runs while Barton maneuvered for an attack. This attack resulted in an underwater explosion, and the U-boat was no more.

Later in the day, Ens. George C. Benoit in his *Avenger* and Lt. (jg) John F. Thompson executed a similar maneuver against another fully surfaced submarine. A mechanical failure forced Benoit to make three passes before releasing his depth bombs. Then an underwater explosion resulted, and it is probable that the U-boat was blasted sufficiently to end any threat it might have been to allied shipping.

On the 24th, Lt. (jg) Edward Van Vranken made three strafing runs on a submarine before it submerged. No explosion was observed, so Lt. (jg) Jack Padberg in a TBF and Lt. (jg) Peterson were vectored out to the scene of the original contact, where a dye marker had been dropped. They began searching the area, and Padberg finally spotted the sub. He made three strafing runs out of the sun, hit his mark and was credited with a kill.

ONE SUB at a time was all right, but two subs at one time were better. The team of Lt. (jg) Bobbie F. Richmond, bomber pilot, and Lt. (jg) Van Vranken, fighter pilot, had that happy

situation presented to them July 30th when they spotted two submarines just 200 yards apart. Van strafed one sub while Richmond dropped depth charges on the other. Van made four more strafing runs, and Richmond attacked his victim again. Richmond's attack hit true, a fact signalled by floating debris and a tank rising to the surface. The other U-boat was assessed as damaged.

From 6 August 1943, when the squadron returned to Norfolk, to 17 July 1944, when it sailed for Pearl Harbor, VT-29 did convoy duty on the U.S.-Casablanca route, went through additional training and prepared for its distinguished service in 1944-45.

THE LATTER part of 1944, based on the USS *Cabot*, the squadron participated in the Battle for Leyte Gulf, conducted air attacks on various targets in the Philippines, and received their share of battle scars and experience. Lt. Cdr. I. H. McPherson, skipper, Lt. (jg) C. F. Norton, and Lt. (jg) J. P. Speidel received the DFC.

As the squadron was preparing to launch an attack November 25th, the Task Group was attacked by *Kamikaze* planes. Lt. (jg) H. H. Skidmore was revving up the engine of his plane on the catapult when a *Zeke* made a suicide dive immediately in front of him. The propeller of the plane was sheared off, but all escaped with minor burns.

Early in 1945, after a Christmas let-up in Ulithi, VT-29 returned to some of its old objectives in the Philippines, then headed for the China Sea to knock off a few Japanese convoys reportedly under way there. The *Cabot* was the first fast carrier of our forces ever to enter this sea and the last to leave.

On the 12th of January, a four-plane team set out in search of the enemy fleet and covered an area over 400 miles long, including the coast of Indo-China. The fleet was not found, but the bombers did locate a convoy of

★ *THIS IS the ninth of a series of short sketches of squadrons in World War II. It is based on reports filed with Aviation History and Research DCNO (Air).*

Japanese merchant ships. Lt. (jg) S. D. Tinsley and his crewmen with their fighter escort bombed and strafed this convoy and sent out its position to the other planes. Later, Lt. (jg) Harker and Ens. Walker attacked, and Walker and his crew were hit and killed. The three remaining TBF's, very short of gas, returned to base.

On the 15th, seven TBM's struck Takao Harbor on the southwest coast of Formosa; and on the day following they hit Hong Kong, the Taikoo shipyards. Docks and ships were hard hit, and the entire area was blanketed with the heavy black smoke of burning installations. After another strike on Takao, the squadron returned to Ulithi.

By February 10th, the Fleet was again ready to venture into Japanese waters. During the first days out, VT-29 made practice strikes against their own task groups and went on antisubmarine patrols. But where were they headed?

The ACI officer finally gave the word—TOKYO! VT-29 and other squadrons of the Task Force were to attack the Tachikawa Aircraft Engine Plant.

On schedule, the strike was launched February 17th. No sooner was each plane with its tons of bombs airborne and headed for rendezvous than it was swallowed up by the bitter cold overcast over the coastal waters of eastern Honshu. An hour later, the planes broke through the clouds into the crystal clear air of the Japanese homeland to see lying ahead that geographic trademark of the Kingdom of the Rising Sun, Fujiyama.

But there was no time to reflect upon the beauty of the landmark as the planes pushed their way to the target, opposed continuously by five-inch antiaircraft guns. Bombs away! Every VT-29 plane hit the target with its bombs, and there

burst below the *Avengers* flame-ridden buildings. The airborne invaders returned to their carrier, safe and victorious. The next day they worked over Chichi Jima.

Back in Ulithi from March 1st to 14th, the squadron headed out to sea again for 20 days of concentrated destruction. On March 18th, 14 of 28 buildings at Miyazaki airfield were destroyed by the squadron, and just to let the rest of the Japs on Kyushu feel their punch, VT-29 pilots demolished 13 *Betty's* lined up on Omura airfield.

THE NEXT morning at 0700, seven VT-29 planes headed for the enemy in his own front yard—the Jap Fleet at Kure Harbor. Daring the heavy flak, the torpedo pilots tore into the target. Lt. (jg) Tinsley scored hits on a cruiser and the dock to which it was secured. Lt. (jg) R. J. Maghan hit a *Kongo* class BB, while Lt. (jg) Vashro and Ens. Zemanek hit the *Yamato*.

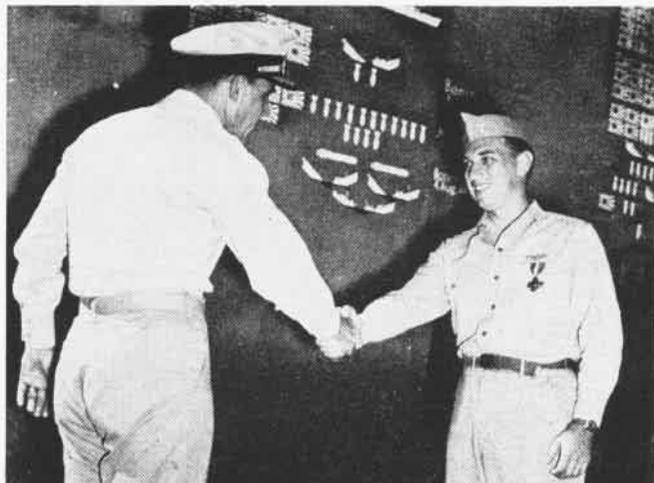
For five straight days beginning March 23rd, VT-29 pounded Okinawa. On the evening of the 28th, it was reported that the Japanese Fleet was on the move again. All the next morning, VT-29 hunted this prey. Failing to find it, they went after targets in Kyushu. On March 30th, VT-29 returned to Okinawa for five additional days of pounding airfields, hangars, barracks, bridges and beach defenses.

Climax and finale of the career of Torpedo Squadron Twenty-Nine came on April 7th when the Japanese Fleet was found again. The proud *Yamato* became the central target. A nine-plane strike was launched by VT-29. Some of the hits scored by the squadron were part of the lethal attack that ended with the sinking of the *Yamato*.

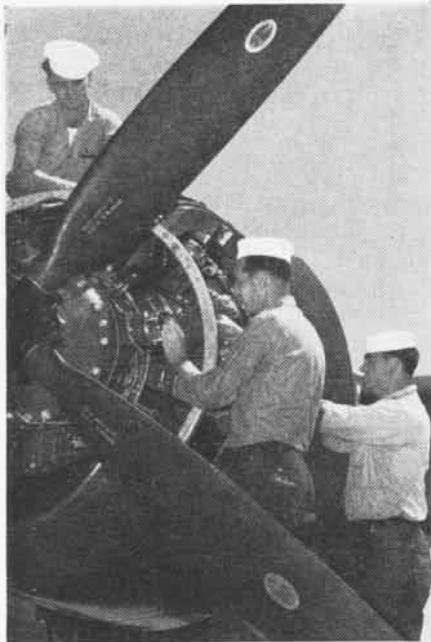
On April 9th, VT-29 headed home, sped on their way by the cheering congratulations of Admiral Spruance who expressed deep regret at the departure of "one of my most effective units."



STRONG IN ASW WARFARE, VT-29 SENT MANY ENEMY SUBMARINES DOWN



LT. WILLIAM ANDERSON, USNR, SMILES AS HE RECEIVES NAVY CROSS



Philpot, Hudman and Angelicchio of ML-4 check P2V engine before it leaves

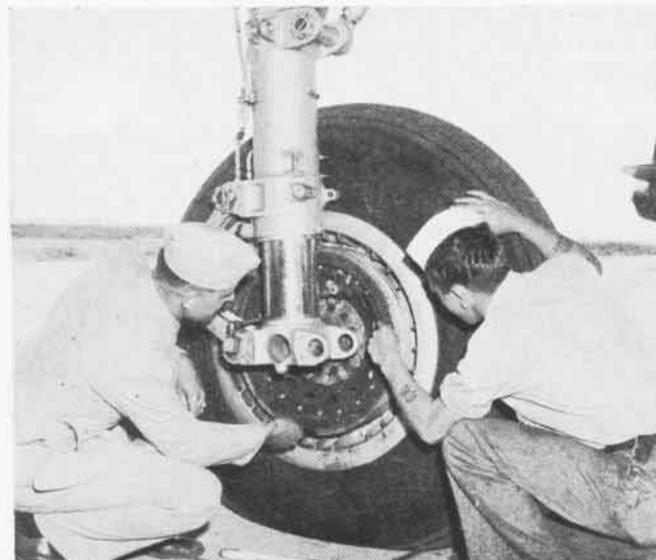


Against a backdrop of snub-nosed P2V-1's, four pilots of VP-ML-2 head for planes to fly; men, all jg's, are: C. R. Leonard, O. R. Quelland, F. A. Dalton, E. P. Davis

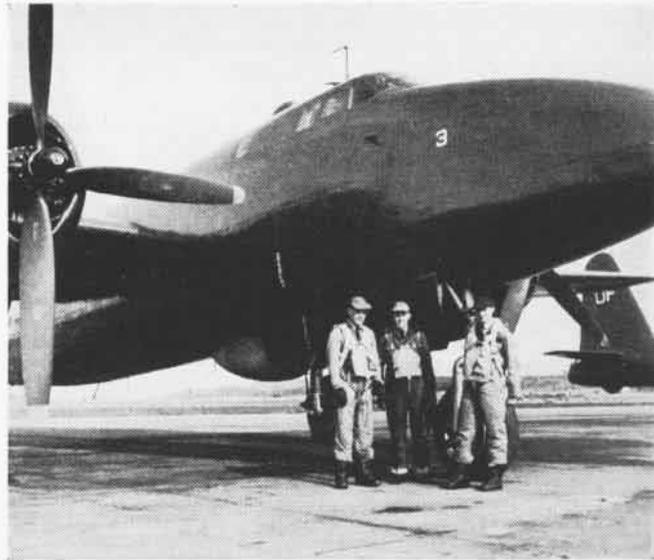
NEPTUNE, WORKHORSE OF FLEET



One propeller feathered, with less than 100 feet altitude, a P2V-2 demonstrates its single-engine performance at Miramar



Frank Janica, ADC, and Robert Olsen, ADAA, check brake clearance at ML-4; crews find maintenance on P2V's no worry



Under the whale-like fuselage of their Neptune, pilots Hines, Miller and Hofer of VP-ML-1 get set for a cold weather hop

MANY aircraft have qualified for the title of "workhorse of the fleet" in the history of naval aviation. Newest of the line is the P2V Neptune, shown on these pages in its two versions—the P2V-1 and P2V-2. This versatile plane, whose chief duty is antisubmarine patrol, is also being used as a photo plane, mapping 30,000 square miles of Alaska.

These photographs, taken for NAVAL AVIATION NEWS by three Neptune squadrons—VP-ML-1, -2 and -4—show both versions under fleet operational duty. Latest feat of the Neptune was to fly its 60,000-pound bulk off the deck of the *Coral Sea* with the aid of JATO, a history-making event which opens up the world to the eyes of this high-capacity plane. The Neptune's 11,236-mile world-record flight still stands.



Blunt-nosed P2V-1 with twin .50 cal guns is being prepared for flight by W. E. Williams, AL2, and I. W. Peters, ALC



Neptune is not the Navy's biggest aircraft but its vertical fin is plenty tall, as this photograph by VP-ML-2 indicates



Rosica, AO1, checks twin 50's in turret of ML-1 *Neptune*; late models carry 20's



W. E. Williams, AL2, works in compact radio compartment of VP-ML-2 *Neptune*



Ordnancemen load HVAR rockets on pylons of *Neptune* on the west coast



Neptune of ML-1 demonstrates the power of its two engines by climbing above long row of its mates at Whidby island



Propeller governor adjustment is made by Angelicchio, AD2, ML-4 as Moreau, AD3, gets inside nacelle to fix carburetor

WATER CHARACTERISTICS OF THREE FLYING BOATS



JRM MARS HAD BEST HYDRODYNAMIC PERFORMANCE OF THE THREE FLYING BOATS TESTED

THE STEVENS Institute of Technology has just finished a series of tests for BUAER which evaluate and compare the hydrodynamic characteristics of the German BV222, the British Short *Shetland* and our own JRM-1 *Mars*. All three of these flying boats are in the 100,000-pound or over class. The JRM-1 is heaviest with a maximum gross weight of 145,000 pounds, the *Shetland* next grossing 60 tons, and the BV222 is the lightest with a maximum weight of just over 100,000 pounds. The *Shetland* and *Mars* are both powered by four engines each, while the German boat has six.

In addition to the towing tank model tests carried out by Stevens, a flight test crew from Patuxent flew and water-tested the BV222 in Norway shortly after the war's end. And of course, the *Mars* has undergone extensive flight and hydrodynamic tests at the Test Center. The Patuxent reports on both boats concur closely with the Stevens model tests.

The Stevens investigation indicates the *Mars* has the best all around hydrodynamic performance, although the BV222 is almost as good and in some single respects slightly better than the *Mars*. The *Shetland* fell short of both the *Mars* and the German boat in almost all respects.

THE *Mars* hull is the only completely conventional design having no unusual features such as the faired step of the *Shetland*, nor the transverse afterbody steps and afterbody skeg of the 222. These transverse afterbody steps on the 222 are about three-quarters of an inch deep and vary in number on different models. The plane tested had five transverse steps, while some of the later 222's had as many as 12. These auxiliary steps acted as skip-dampeners and were successful to some extent, although adding drag at high planing speeds,



FAIRED STEP OF SHORT SHETLAND VISIBLE HERE

The peaks of the main spray blisters emanating from the BV222 hull are lower than those of the *Mars*, although the wing of the 222 is more apt to be hit by spray because of its lower position. As mentioned, the German boat has excellent skipping characteristics, whereas

the *Mars* exhibits some skipping tendencies at trim angles approaching the stall. At displacement speeds the BV222 has the lower resistance, but at hump, transition and planing speeds, the resistance of the JRM-1 is the lower. The *Mars* is more stable over a wider range of trims and moments than the 222.

THE *Mars* has, for the most part, neutral directional stability characteristics while the yawing moment curves for the BV222 hull have steep negative slopes. This indicates that large rudder moments are required to change direction on the 222. This part of the Stevens report was borne out by the test crew findings in Norway, which reported the German boat had little or no directional rudder control on the water up to 40 knots. It had a very strong tendency to turn into the wind and about 10 knots of crosswind was all it could stand on take-off. When operating in rough water at taxiing speeds, the *Mars* and 222 are about equally seaworthy. The *Mars* shows better landing impact characteristics than the BV222.

Two major defects in the water handling characteristics of the Short *Shetland* make it less effective than either the *Mars* or German boat. The *Shetland* hull is very unstable on landing over a fairly large range of trim angles. And, it is also very unstable directionally, exhibiting "hooking" tendencies above hump speeds. The *Shetland* has about the same resistance in the displacement range as the *Mars*, but has higher resistance in the transition and planing ranges. The peaks of the main spray blisters of the *Shetland* hull are slightly lower than those of the *Mars*.

The bow spray properties of the three hulls are about the same at taxiing speeds in rough water, although the bow spray of the *Shetland* is slightly lower and finer than that of the other two hulls at comparable full-size conditions.



THIS BV222 AT DOCK IN TRONDHEIM FIORD NORWAY WAS THOROUGHLY TESTED BY NAVY CREW

N.A. NEWS VISITS
NAS
NEW ORLEANS

NAVAL air stations range in altitude all the way from 5,200-foot Denver down to humid New Orleans where Lake Pontchartrain's waters lap almost at the operations office door and a good rain makes the field a lake.

A big "7 Feet Altitude" adorns the hangar door to greet pilots of visiting planes as they screech their brakes trying to stay on the 3,300 foot runway.

Located across the road from a famous beach resort on the outskirts of the "Crescent City," NAS NEW ORLEANS is now the home of seven Reserve squadrons, making it one of the smaller Reserve activities in numbers as well as in runway length.

Back in pre-war days, the place where New Orleans week-end warriors now fly was just another Mississippi river bog. They pumped some of the mud out of Pontchartrain's bottom and made an airfield out of it. In the early days its landing surface wasn't too hard. *Yellow Perils* often sank their wheels in the



NEW ORLEANS RESERVES SOAR OVER CITY WITH ITS WINDING MISSISSIPPI RIVER ON THE RIGHT

LOUISIANA RESERVISTS FLY, RAIN OR HURRICANE



NANEWS FLYING REPORTER TRIES NOLA RAMP

soft ground while taxiing around on the unpaved surface and had to be rescued by tractors.

New Orleans' Reserve base has one advantage over many Navy stations; it is located within easy driving distance of its "clientele," as contrasted with such places as Los Angeles, Grosse Ile and Miami which are way out in the boon-docks. New Orleans boasts another unusual feature—it owns one of the few junior-sized landing ramps to help passengers in *Beechcrafts* to dismount. At most air stations, you either jump out

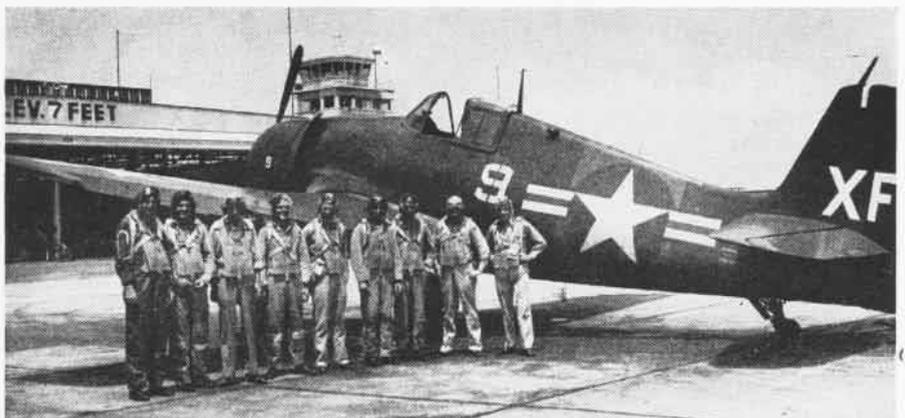
from a crouched position, or try to hit the "footstool" most *Beechcs* carry. NANews' Flying Reporter had a chance to try out the ramp (see photo) and put in an "aye" vote for it.

After starting out as a primary flight training station in 1941, New Orleans switched to a flight instructor's school in 1944. It wound up its war service as a separation center in 1945 and in July 1946 reopened as a Reserve station with Capt. James E. Leeper as C.O.

Although it is on the shores of one of

the biggest lakes in the United States, New Orleans has no seaplanes or ramps. The well-populated bathing beach across the road with its southern-version of Coney Island probably is the reason. Big planes like R4D's can land there but the air station is so hemmed in by residences that it cannot expand.

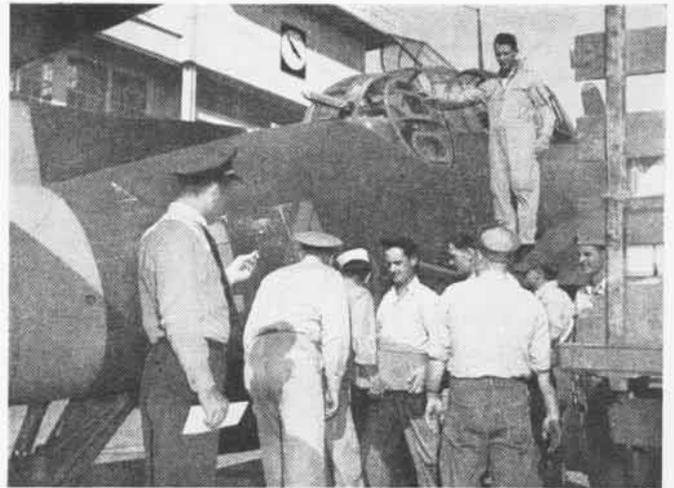
New Orleans has the distinction of being the first Reserve station to have its enlisted personnel quota filled 100%, reaching that peak on Navy Day, 1947. When Congress passed the draft law in



Organized pilots Carruth, Tyson, Wright, Maver, Garrison, Klein, Young, Day and Ely, representing three different squadrons, get in their annual training flights



VMF-143 pilots—Lt. Chaisson, Major Drury, squadron CO, Lt. Hosch—go out to fly in Birthday show and open house



Pilot Denver Norman on wing of his TBM watches loading of Texas City relief plasma; Asst. Supply Officer Grace assists

June, a flood of young men from 19 to 25 poured out to try to join the New Orleans Reserve. This backlog is permitting New Orleans to pick and choose its enlisted men. New recruits, being pea-green to aviation, get a six-weeks "boot camp" course in aviation fundamentals. At the end of six months each can pick his own rate to try for.

Head of the training program as senior type training officer is Lt. Cdr. J. C. Strange, who also doubles as acting exec of the station. Strange became

a naval aviator in 1937. Fighting in the Solomons, Munda, Rabaul, Hollandia, Truk, Marianas, Palau, Leyte, Mindoro, Okinawa and Japan, he bagged eight Jap planes with VF-50. He won the DEC and Bronze Star for his feats.

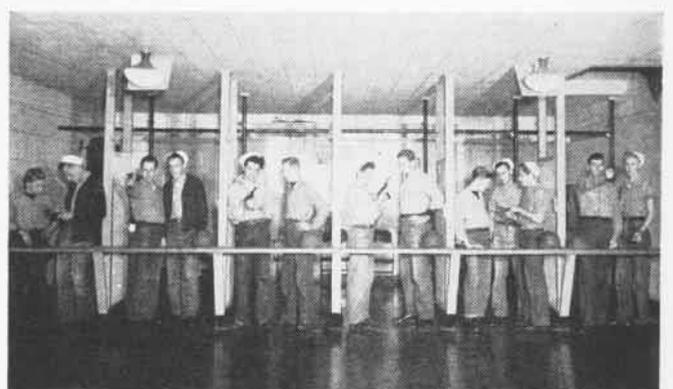
Capt. Leeper also has an extensive war record, serving from 1939 to 1942 with Patwings 3 and 7 in the Atlantic antisubmarine campaign from Puerto Rico to Iceland. He was skipper of VP-73 and CO of the CVE *Shamrock Bay* in the South Pacific and Okinawa. Capt.

Leeper won two Legions of Merit and the Bronze Star.

New Orleans' most decorated Reservist is Lt. Cdr. Merrill J. Hemby. He was with VB-85 on the *Shangri-La* off Okinawa and Japan. Putting bombs into the *Haruna* and *Nagato* won him two Navy Crosses. He also holds the DFC and three Air Medals. Another outstanding fighter was Lt. Cdr. Robert F. Edmondson. He won the Navy Cross in the Battle of Coral Sea and picked off the DFC, Silver Star, three Air Medals



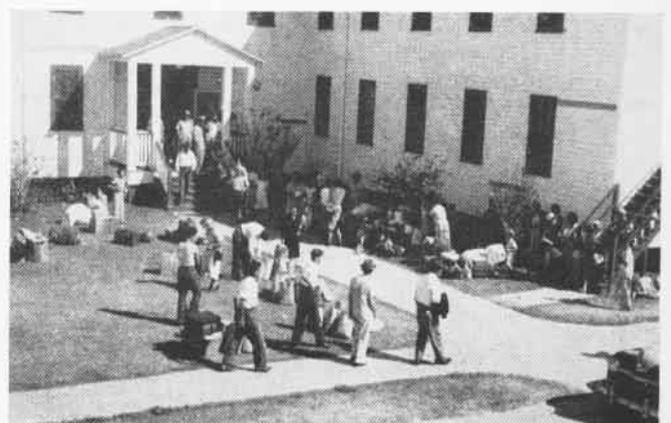
Skipper of Tulane Cadets, Capt. H. D. Power, sees parade of his men as a feature of an open house at NAS NOLA



Stationkeepers and Organized Reserves practice together; exchange tips on firearm use at New Orleans' excellent range



These A&R chiefs—Willis, Johnson, Russell, Gantar, Chatham—form backbone of instructor corps for training O-2's



Swampland flood refugees, several hundred strong, were quartered in barracks at New Orleans during fall hurricane



Reservists Carruth, Tyson, Wright, Maver, Garrison, Klein, Young, Day, Ely



Capt. Leeper presents seven awards to L. Smith as other stationkeepers look on



Ex-Quantum Reservist Eddins meets New Orleans Training Officer Strange

and two Presidential Unit Citations while fighting with Bombing Five and Scouting 10 off the *Yorktown* and *Enterprise* in 1942.

New Orleans' public information officer is unique in that he was not in aviation during the war. A former newspaperman, Lt. Cdr. J. H. Parsons found himself a destroyer executive and skipper of a flotilla of PC's in the North Atlantic and at the Normandy invasion, a strange fate for a pounder of typewriters but a story often repeated.

With a population of 650,000 to draw from, the Reserve station has had no trouble in filling its vacancies. It has 83 Organized Reserve pilots and 27 Associated Volunteer pilots, plus 692 enlisted men in the Organized ranks, not including Marines. The Marine unit, headed by Lt. Col. L. H. McCulley, numbers 48 officers and 164 men.

When Congress recently approved calling back of former aviators, 38 men applied for one-year duty and 18 got orders almost immediately, all fighter pilots. Many Reservists going to Tulane University live in the BOQ at the air station. Others attend Louisiana State U at Baton Rouge, Springhill Col-

New Orleans Reserve Squadrons

FASRon-163—Lt. Cdr. C. T. H. Voelker, CO; Lt. (jg) Leslie B. Case, XO.
 FASRon-163—Lt. Cdr. G. E. De Metz, CO; Lt. Cdr. E. J. Harmeyer, XO.
 VF-53-L—Lt. John C. Ely, CO; Lt. Otis B. Calton, XO.
 VF-84-E—Lt. Cdr. J. D. McMillan, CO; Lt. George W. Pigman, XO.
 VA-84-E—Lt. Cdr. R. D. Cosgrove, CO; Lt. Wm. R. Jackson, Jr., XO.
 CVEG-84—Lt. Cdr. R. F. Edmondson, CO.
 CVLG-53—Lt. Cdr. F. C. Wolff, CO.
 VA-53-L—Lt. Cdr. William R. Eddins, CO; Lt. David B. Naver, Jr., XO.
 VMF-143—Maj. F. C. Drury, CO; Capt. C. Bernard, XO.

lege or Northeast Louisiana College. Six enlisted men and four aviators drive in from Mobile, 165 miles away, sharing expenses, to get in their flight time at NOLA (New Orleans, La.)

Two subsidiary units operate under the station. An AVU(A) at Pensacola does its flying at Corry Field, using planes from NAS PENSACOLA. This first and largest AVU(A) in the Reserve Command flies F4U's and F6F's. An AVU has been organized at Alexandria, La., and its members occasionally come to New Orleans to do some flying.

New Orleans Reservists have played an active part in numerous disasters in the Gulf region. When the Texas City

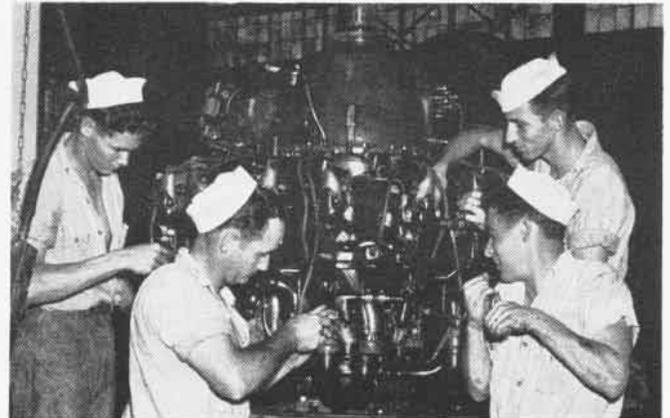
explosion occurred, Reservists flew Red Cross and WAA medical supplies, fire fighting equipment and personnel to the ruined town. Organized and Volunteer pilots from Tulane U and civilian jobs downtown took five days off to operate shuttle runs to the town. Doctors and nurses from New Orleans were flown south and pick-ups were made at various spots in Louisiana and Mississippi.

WHEN THE heavy September, 1947, hurricane hit Gulfport, Miss., Reservists flew coast survey hops over the area and ferried in communications equipment and Red Cross workers. The first hurricane to hit the area in 25 years, it did \$60,000 damage at the air station. Civilian refugees from nearby residential areas took refuge in the station's barracks.

The Reserve station participates in numerous civic functions. One of its most successful open houses was this summer when 15,000 visitors watched simulated carrier operations. Because of its location, the station is called on frequently to locate lost sailboaters, rescue swimmers, and it operates a crash boat and rescue plane service for that job.



New Orleans showers fail to dampen ardor of pilots from VF-84-E; Ens. A. Denis and H. Dey ride to work in style



Industrious A&R stationkeepers in engine overhaul; Bear-den, Reagan, Gisaro and Blanche try their hands on repairing

RESERVE SETS FLIGHT MARK



WINNERS OF THE SQUADRON BEAUTY CONTEST AT NARTU JACKSONVILLE LINE UP WITH JUDGES

NAVAL AND Marine Air Reserves celebrated their second post-war anniversary amidst great fanfare. Behind them lay a year of record-breaking operations. Reserve aviators had piled up 597,551.5 flight hours to top the 421,506.5 hours flown in the previous year. Organized Reserve numbers had climbed from 24,617 to 30,978 officers and men. Training was in high gear. Squadrons were working more and more as self-sufficient units and had engaged in a wide variety of practical operations during their two-weeks annual cruises.

Thousands of civilians attended the anniversary celebrations which were held at all stations and units within the Reserve network. Their interest in the program was a fitting tribute to the fine record chalked up by the weekend warriors as well as to the cordial relationships they have established in their local communities.

To acquaint the public with the type of training now being given, most stations arranged static exhibits of their latest equipment. Reserve squadrons topped off the birthday celebration with demonstrations of simulated carrier operations. At many places Regular Navy pilots showed up to salute the Reserve and to thrill the crowds in their roaring jet fighters. Some 20,000 to 30,000 visitors at Atlanta, for example, watched Lt. Col. Carl and four pilots from VMF-122 in their FH-1 *Phantoms* and the *Blue Angels* under Cdr. "Dusty" Rhodes put on breathtaking displays.

A particularly successful open house was reported by NAS OLATHE. Some 15,000 guests saw the show put on by

66 station aviators, which was followed by a demonstration of FJ-1 *Furies*, flown by four pilots from Fighting 1. NAS GROSSE ILE held its best open house to date; some 50 Reserve planes participated in its show.

About 20,000 persons turned up at the Seattle NARTU celebration, while NAS WILLOW GROVE attracted some 10,000 visitors. New Orleans, which was sweltering in a heat wave, managed to entertain some 5,000 guests on the station as well as an additional 8,000 spectators who assembled alongside the field to watch the show.

The big event at NAS LOS ALAMITOS was the birthday dance which was held in the two big hangars for some 10,000 people. This popular affair, with music

by Jimmy Dorsey, returned a profit of \$575, which was donated to Navy Relief. Admission to the anniversary dance at NAS SQUANTUM was one new candidate for the Reserve.

NAS AKRON entertained some 3,000 guests at its open house and welcomed 1,000 more who turned up by mistake on the following day.

Splashy Celebration at Jax

Since many local celebrations were being held at the same time as the birthday observance, Naval Air Reservists were often asked to share in these festivities and thus gained even wider public acclaim for the program.

Undoubtedly the splashiest and most eye-filling of these local tie-in events was the Florida Beauty Pageant, during which Florida's representative to the Atlantic City "Miss America" contest was selected. Since this affair was sponsored by the State Junior Chamber of Commerce, an organization which has given fine support to the Reserve unit at NAS JACKSONVILLE, NARTU Jax's weekend warriors were only too glad to take part in the non-pulchritudinous phases of the event.

On Saturday afternoon, when thousands were gathered at Jacksonville Beach for the forthcoming pageant, 26 fighters from the NARTU flew over the beach. On the first pass they spelled out the letters F L A and on their second they formed a gigantic anchor. The new NARTU attack squadron then joined in the festivities with low level attack formations off-shore. The event was broadcast from an adjacent rooftop by the PIO, CO Priestman, Zack ("Smilin' Jack") Mosley, the Junior



CAPT. KEENE CUTS THE 350-POUND BIRTHDAY CAKE FOR GUESTS AT NAS OLATHE'S OPEN HOUSE

Chamber of Commerce president and two radio announcers, who swapped the mike at frequent intervals.

At the coronation ball that night, NARTU squadron flags bedecked the beauty bowl. Immediately after Miss Rosemary Carpenter was crowned as "Miss Florida," a four-foot-square birthday cake was rolled out on the stage. Assisted by Captain Priestman, who had served as one of the judges, "Miss Florida" cut the cake with a Navy sword. The first piece was presented to the Honorable Fuller Warren, Democratic nominee for governor, who in turn gave high praise to the weekend warriors on their second anniversary. These proceedings were watched by NARTU Reservists, all of whom had been invited to the ball.

With all the attendant publicity, including newsreels, radio broadcasts and newspaper stories, naturally the next day's open house at the NARTU was a great success. The occasion was climaxed by a squadron beauty contest, in which many of the pageant contestants participated. Winners are shown in the lead picture with the squadron commanders who served as judges. From left to right, they are: Miss B. H. Lindquist (VMF-144), Maj. T. Mobley; Miss J. Herrington (VP-ML-56), Lt. Cdr. C. Rogers; Miss B. Harkey ("Miss Weekend Warrior" and "Miss FASRON-158"), Lt. Cdr. B. Gittings; Miss Pat Reel (FASRON-58), Cdr. LeRoy Johnson; Miss P. A. Jackson (CVL-52), and Lt. Cdr. E. Fischer.

Memphis War Game Training

When Mud Island, right off Memphis in the Mississippi River, was "invaded" last June, Navy, Marine, Air Force and Army Reserves, flanked by



CO CLARKE GIVES THE \$575 TO CHAPLAIN PECK



MEMPHIS RESIDENTS HAVE BOX SEATS AT THE JOINT COMBAT TRAINING MANEUVERS ON MUD ISL.

the National Guard Air Force, came out to repulse the "enemy" entrenched on their front doorstep.

Amidst the sound of explosions rocking the area, *Corsairs*, *Helldivers* and *Avengers*, flown by the aviators from NAS MEMPHIS' Air Group 91, swooped down on the target from all directions. Fighters and bombers of the defending forces tore in to oppose them. The air was alive with 100 attacking and defending aircraft. Under close support provided by Marine Air Reserve *Corsairs*, ground forces of the Army Reserve, the National Guard and the Coast Guard Auxiliary backed by the Navy's Surface Reserve, hit the "beach" and met the "enemy."

This was the climax of a practical two-day war game problem, in which the Reserves of all services took part. The action was staged in full view of thousands of local residents. Approximately 2000 men, 100 aircraft, plus some 4 landing craft and 6 LCVP's were engaged in the operation, which simulated actual combat conditions. Purpose of these combined maneuvers was to maintain "a high degree of coordination, training, and liaison among the many Reserve units in the Memphis area." The winner, according to newspaper reports, was the public whose lives and property were thus assured protection by well-trained Reserves.

Naval and Marine personnel from NAS MEMPHIS played an important role. In addition to the 29 aircraft, under the command of Lt. Cdr. F. P. Jacobs, Jr., and the 16 *Corsairs* under Maj. W. H. Crozier, that took part in the attack, the air coordination of the whole operation was directed by Lt. Col. W. A. Kuretich, CO of the Marine Air Detachment.

June Cruises Cover Continent

Squadrons from NAS ATLANTA fanned out to four different places for their June training cruises. Most out-

standing operation was that undertaken by CVEG-66, which moved to NAS MIAMI for 11 days. The group operated as an autonomous unit, simulating advanced base conditions, with the station providing berthing and messing facilities. Atlanta's VR-72 and VP-ML-51 provided support, flying down enlisted personnel and equipment.

Emphasis was placed on live gunnery, bombing and rocket firing, since Atlanta has no facilities for this type of practice. With the support of maintenance and ordnance personnel, sparked by the work of 11 station-keepers who accompanied the group, some 631 hours were chalked up during the period.

In addition to supporting this group, members of VP-ML-51 made two navigational hops to Bermuda, renewing their skill in operation of Loran, radar, communication and navigation equipment. They also spent four days conducting bombing and gunnery exercises at NAS PENSACOLA. Meanwhile Atlanta's VF-51-L and VF-57-L made several gunnery flights at NAS JACKSONVILLE, firing at towed targets.

Reservists from NAS OLATHE, another station that lacks nearby target areas, also took part of their training cruises in Florida. A mass trek to Whiting Field for four days of gunnery and instrument flying was undertaken by 21 officers and 30 men of VP-ML-65. This cruise also included cross country flights with stops at Miami, Key West, Jax and Memphis.

Under the command of Lt. Cdr. Jack Kitchen, 16 officers and 24 men of VF-69-A and VA-69-A undertook a six-day gunnery exercise at NAS PENSACOLA. This was the first cruise from Olathe made without the aid and supervision of a station officer. It was a decided success, with 16 seaman recruits among the men showing a great deal of initiative in the maintenance and armament of aircraft throughout the cruise.



CO PRIESTMAN HELPS 'MISS FLORIDA' CUT CAKE

Whiting Field was also booked during June by the weekend warriors from NAS DALLAS for what turned out to be one of the best cruises ever held at an advanced base by Dallas Reservists.

Highlight of the Dallas cruise picture, however, was the fighter-director and air group attack exercise which was conducted with the destroyer *Corry*. *Corsairs* acted as the defending aircraft, while *Avengers*, *Helldivers* and *Hellcats* led the attack.

While these groups were going south, squadrons from NAS COLUMBUS went north for their gunnery practice, making some 18 flights to NAS GROSSE ILE and its target area. An average of 15 aircraft participated in each flight.

During this busy month of June, Reserve transport squadrons, as usual, were taking their two-weeks annual duty with the Atlantic and Pacific Fleet Logistics Support Wings. VR-74 from NAS DALLAS, for example, was one of some six Reserve air transport squadrons based at Moffett Field for training at the same time. This squadron maintained a daily round trip flight schedule between Moffett and Clearfield, Utah, conducting operations with full gross loads. Like all VR units, this squadron operated as far as possible as an independent unit, taking care of its own line and flight duties.

On the Atlantic seaboard, VR-73 from NAS COLUMBUS also took a June cruise. They received high praise from the Commander of Fleet Logistics Support Wing Atlantic on their outstanding performance during this two-weeks training at Patuxent River.

These are only a few examples of what Reservists are doing on their cruises, but they serve to illustrate the practical scope of Reserve training at stations throughout the country. And they testify as to the fine cooperation between Reserves and Regulars.

Station Round-Up

● NAS GROSSE ILE—The American Ordnance Association demonstration, held at Selfridge Air Force Base during June, was a "million dollar extravaganza" in which Navy, Air Force and National Guard units worked in conjunction with other branches of the armed forces. The display grew to

large proportions with dignitaries from all over the world participating. It ultimately consumed nearly the full time of one-third of the station personnel at Grosse Ile. Although it lasted only three days, the preparation and cleaning up took more than a week. In addition the station played host to over 50 transient planes flown on for the event from the *Coral Sea*. Captain Cooper, Grosse Ile CO, was coordinator of the show.

● NAS MINNEAPOLIS—With maintenance working day and night shifts, weekend warriors during June logged 7,377.2 pilot

hours for a new record at MINNEAPOLIS.

Reservists had a big time up in Bemidji. On 19 June, the first day of the Bemidji Air Days celebration, they commissioned their new AVU(A) with Lt. (jg) Wolfe as CO. On the second day of the fete Rear Admiral Richard Whitehead was initiated into the Chippewa Tribe as "Chief Weekend Warrior." Some 55 Reserve pilots participated in the air show, which was witnessed by some 75,000 people. Pilots all agreed that although Bemidji is small, its hospitality is cosmic.

Globe Circlers Deluxe



THE HARBOR BRIDGE COMES INTO VIEW AS THE VALLEY FORGE APPROACHES SYDNEY, AUSTRALIA

AROUND the world trip from San Diego—with ports of call at Sydney, Australia; Hong Kong, British Colony; Tsingtao, China; Singapore, British Malaya; Trincomalee, Ceylon; Ras Tanura, Saudi Arabia; Gibraltar; Tangiers, Spanish Morocco; Bergen, Norway; Portsmouth, England; New York and the Panama Canal Zone—reads like a deluxe Cook's tour. But this 46,000 mile cruise was all in the line of duty for the members of VF-12-A aboard the *Valley Forge*.

Aerial operations included maneuvers with the Royal Australian Navy, Royal Australian Air Force and the U. S. Naval Forces of the western Pacific, Mediterranean and eastern Atlantic. The squadron participated in simulated strikes, CAP's, rocket, bombing and strafing attacks on towed sleds, and in aerial parades.

Leaving San Diego last October the squadron operated in a wide variety of climates and weather conditions, which kept the men busy repairing cracked cockpit canopies and maintaining proper inflation of oleos and tires. After a three-months stay in the Hawaiian area, the *Valley Forge* headed south for a visit "down under." Underway once more, it took ten days to get from the tropical heat of the South Pacific to the

freezing cold of North China. Two weeks later the ship was back in the Malayan tropics and the calm Indian Ocean. Then in one month the squadron travelled from the schmals (sandstorms) of the Persian Gulf to the snow storms of the Scandinavian region.

Throughout this long period of operations, which included night qualifications in the Hawaiian area, the only accidents were two hard deck landings, which put these two planes permanently out of commission. Although the squadron was away from U. S. shore bases for over six months, an average availability of 94% was maintained for the remaining 22 planes.

Enroute, all hands received quite an education in the field of foreign customs and economics. They became quite adept at bargaining with native shopkeepers throughout the world, dealing in Australian, Gibraltar and British pounds; Hong Kong, Chinese and Malayan dollars; Indian and Arabian rupees; pesetas; francs; Norwegian kroner and U. S. dollars. Purchases ranged from handkerchiefs and cigarette holders to teakwood furniture and Persian rugs.

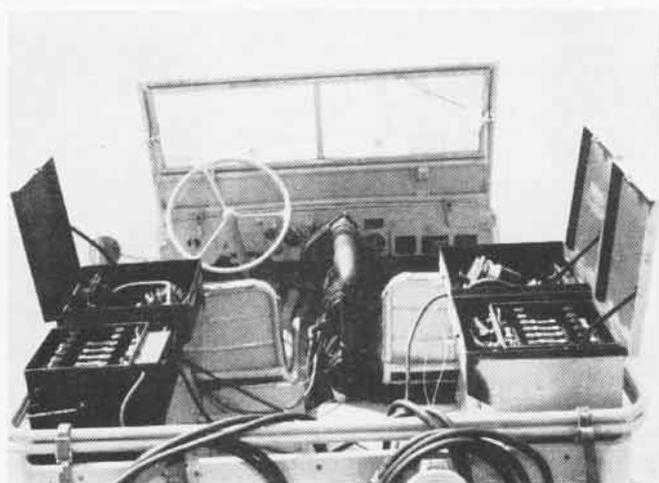
Now that the squadron is back in San Diego, it's a real relief to know that they don't have to inquire about today's rate of exchange at the nearest bank.

TECHNICALLY SPEAKING

JEEPS PROVIDE AIRCRAFT MOBILE POWER SERVICE



TYPE 'E' ALL-PURPOSE JEEP HAS HYDRAULICALLY OPERATED WORK STAND



MOBILE UNIT IS CAPABLE OF STARTING ALL EXISTING AIRCRAFT ENGINES

THE PROBLEM of providing auxiliary power for servicing aircraft is being studied extensively by BUAER to increase efficiency and shorten the time required for such service. Hydraulic power, air power, vacuum power, and especially electrical power requirements are being considered. These power supplies should be portable and versatile. The wide dispersion of aircraft and facilities during recent hostilities indicated that peacetime methods of parking, servicing, and operating aircraft in a group on paved aprons or ramps in the immediate vicinity of aircraft hangars would probably be dispensed with in case of recurring hostilities. Aircraft would be parked and serviced in widely dispersed revetment areas.

Revetment servicing means providing basic hangar services, such as electrical, hydraulic, air and vacuum, together with rapid transportation of operational and maintenance personnel to the aircraft parked in such revetments. Under these conditions, inherently mobile power supplies equipped with front wheel or four wheel drive become increasingly important where operations require their use on undeveloped terrain.

Past experience with the jeep has proved it to be the most desirable unit for such work. Its low attrition rate and ease of maintenance support this decision. The 60 hp jeep engine with its power take-off permits its alternate use as a stationary engine for driving various combinations of aircraft generators and/or similar accessories where-

with the desired aircraft services may be provided.

A series of line maintenance jeeps, Types A, B, C, and D, have been developed and placed in service. Types A and B provide 28.5 volts of direct current for starting aircraft and serve as a mobile auxiliary power supply for servicing electronic and electrical equipment in aircraft.

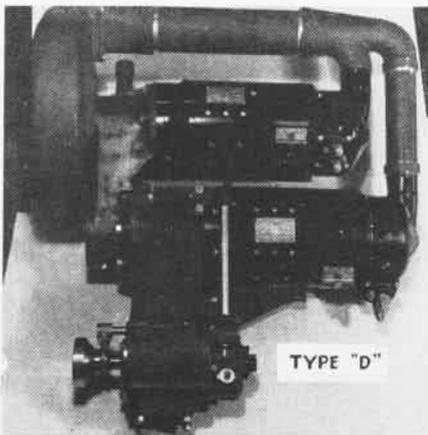
Type C provides 115 volts, 21.7 amps, 60 cycle, single phase, alternating current in addition to the 28.5 volts of direct current. This alternating current is a convenient supply for the operation of flood lights, test equipment, soldering irons, etc., thus providing sufficient power for interim operation of an advance base electronic shop. These units require only a portion of the available

engine horse power to provide the described necessary electrical services.

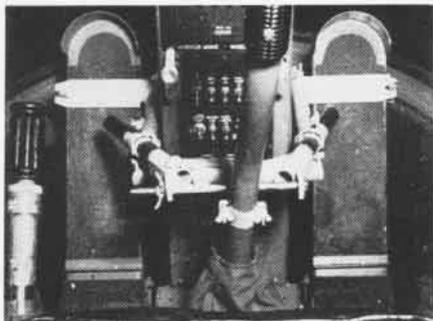
Type D modifies Type B by removing the present single generator drive unit and adding a double generator gear drive. This unit, operating two R-2 generators in connection with one or two standard aircraft batteries, is capable of starting all existing aircraft engines. Only limited procurement of this type was made; however, steps are being taken to procure additional units.

The all-purpose jeep, Type E (See *Digest of U. S. Navy Airborne Electronics*, June 1948, p. 21), supplies alternating current, both 60 cycle and 800 cycle, direct current, compressed air, hydraulic and vacuum systems, complete with instruments, cables, lines and fittings for controlling and transferring these services into aircraft systems. In addition, flood lighting, defueling and fire fighting accessories, a hydraulically operated work stand and built-in tool storage compartment are provided. This unit was prototyped at the Naval Aircraft Factory and tested at NAS Patuxent River.

More units may be produced, depending on the result of further tests at Patuxent. Preliminary reports indicate that the Type E jeep or an improved version thereof will provide facilities needed to maintain and operate aircraft in and from revetments and will also permit the interim establishment of limited maintenance for a group of aircraft, pending the establishment of permanent base facilities in forward areas.



DOUBLE GENERATOR GEAR DRIVE OF 'D' JEEP



JIG LOCKS CONTROLS DURING ROTOR RIGGING

Flight Control Rigging Jig

HU-2, LAKEHURST—After a major assembly has been replaced on an HO3S-1 aircraft, it is almost inevitable that the rigging will require adjustment. The jig pictured here is used successfully by Helicopter Utility Squadron Two in locking the controls while rigging the tail rotor and main rotor.

The old method of locking the rudder pedals involved placing a board across the rudder pedals and using two "C" clamps. Adjusting and locking the control stick in required position was done by sliding tube and turnbuckle mechanism secured to the cabin by two "C" clamps.

The jig designed and used by this activity incorporates a locking device for both rudder pedals and control stick. Control stick angles can be measured longitudinally and laterally with more accuracy and more quickly because of the positive adjustable locking device incorporated in the sliding tubes.

▲ **BuAer Comment**—The control lock described should be of value to activities charged with the maintenance of HO3S helicopters.

Riders Hear GCA Over Horn

VR-5, SEATTLE—A small loud speaker enclosed in a wooden box has been developed by AirTransRon Five to be used in the cockpit in lieu of the extra that used to be carried. Experiments have indicated that the speaker can be extended back into the main cabin of an R5D with ample volume for passenger personnel to hear transmissions being broadcast—such as GCA approaches.

In order to obtain additional volume in the speaker, an amplifying tube was installed in the speaker box. Power for the tube is obtained from the "R L" directly behind the pilot.

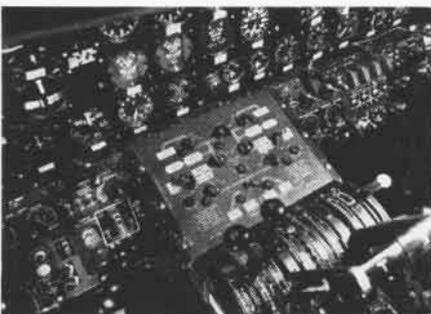


Canned at Alameda—an SC-1 Sea Hawk, the first plane to be preserved via the vacuum packing process at this naval air station, is hoisted by crane onto runway leading into steel storage unit.

P4M Fuel System Lighted

Pilots of the new Martin *Mercator*, twin-jet, twin-reciprocating-engine patrol plane will have to face a somewhat complex instrument panel. Among other little items to remember, there is a matter of eight different fuel tanks.

To simplify the maze of switches in the fuel system, a diagram of the whole system with the fuel switches imposed is spotted right between the plots. The control panel traces with illuminated paths the route the



MERCATOR INSTRUMENT PANEL AND FUEL CHART

fuel is traveling. When a switch is turned off it blocks out its particular lighted gas route. When the switch is "on" the lighted line is unbroken from tank to engine.

The *Mercator* is powered by two P&W 4360-20 Wasp Major engines and two Allison J33 jets. The teaming of the two propulsion systems makes it necessary for the instrument panel to include both conventional instrument dials and jet indicators. Before this panel, a personality that is already split would probably shatter. Great for schizophrenia.

Problems in 'Tin Can' Jobs

NAS SAN DIEGO—One of the responsibilities of the Public Works department is the construction of various types of structures in a safe and efficient manner, using station forces. Fabricating "tin cans" for preservation of aircraft has raised problems in providing a balanced schedule of the working trades involved.

One problem, seemingly trivial, was the receipt at various times of the $\frac{1}{2}$ " x $1\frac{1}{4}$ " bolts needed for the project. These were received in kegs of approximately 2000 bolts which had the nuts run on them, thus requiring that personnel be assigned to back the nuts off the bolts before they could be used. This immediately created an unbalanced schedule because of the length of time required to back the nuts off by hand.

The solution was a pneumatic wrench machine made to speed up the work. Whereas one man was able to remove nuts from only 1750 to 2000 bolts in a day by hand, by using the pneumatic wrench machine he can handle 7000 a day, stepping up the operation approximately 400%.

Another problem developed in regard to the roller or castor which was designed to be made of cast steel. This was submitted to the manufacturer, with tolerances to be met to insure a level rolling operation, for costs and delivery schedule. It was found that the manufacturer could not furnish these rollers quickly enough for efficient progress of the project and could not meet the tolerance

specified without machining the cast rollers at an additional expense to the Navy.

Consequently, a Public Works employee designed a substitute roller which consists of a sawed section of steel shafting with a steel bar bent around the shaft and secured to the shaft by spot welding. These rollers were manufactured at the station, allowing the schedule to be met and saving approximately 460% in cost.

Canopy Cable Gets Guides

VMF-223, EL TORO—After a pilot of this squadron, in an emergency, attempted unsuccessfully to jettison the canopy of an F4U-4, emergency canopy releases on all aircraft were investigated and in a majority of cases deficiencies were found.

The cable in the after part of the canopy was out of the recessed groove designed for its proper travel, it was found. It was impossible to keep the cable in the groove because of variations in length and vibration during flight.

Lt. Clarence E. Schwaneke developed an idea which solved the difficulty. He designed two small clips which were installed on the



CLIP HOLDS CANOPY CABLE IN RIGHT GROOVE

former at the recessed groove. Tests proved they worked and eliminated the cable difficulty.

The clips were made of light gauge $\frac{1}{4}$ " wide strip of spring steel and are attached by a $\frac{1}{4}$ " round-head self-taping screw, one to each clip. The cable is snapped into the recessed groove from inside the aircraft cockpit with the canopy closed and can be removed by the same method.

▲ **BuAer Comment**—Corrective action taken by the squadron is considered satisfactory providing the clip installation is to be permanent. In the event the clip is used as a removable installation it is recommended that an AN 935-6 lock washer be used in conjunction with the self-taping screw.

A&R Changes Name to O&R

The Navy has changed the name of its A&R departments to Overhaul and Repair departments, effective 22 July. The new name is believed to be more modern and descriptive of the work being done by these industrial establishments and the various aircraft maintenance facilities. Both Navy and Marine Corps are affected.

Class A O&R departments are located at Quonset Point, Norfolk, Lakehurst, Jacksonville, San Diego, Cherry Point, Pensacola, Corpus Christi, Moffett Field, Alameda, Seattle and Coco Solo. Class B departments are at such places as Pearl Harbor, Class C stations like Atlanta and Class D at activities like NAAS ANNAPOLIS. All will now be called Overhaul and Repair departments.

NAVY MINE DEPOT

THE NAVAL Mine Depot at Yorktown, Virginia, performs a large variety of work and services, one of the most significant being the support of naval aviation. Established in 1918, this Bureau of Ordnance station occupies a tract of about 18 square miles on the York river, a site chosen as a suitable location on the Atlantic Seaboard where mines could be stored, assembled, loaded, tested, and issued to services, as necessary.

Now under the command of Captain J. F. Donovan, Jr., USN, the Naval Mine Depot is a source of supply for all types of bombs, rockets, aircraft laid mines, aerial torpedoes, and aircraft fuzes of all descriptions. Loading aircraft carriers, their escorts and auxiliary ships, was accomplished during World War II at the depot piers in record time without casualty. The segregation, overhaul, and storage of all types of high explosive ammunition returned from the fleet at the close of the war was of major importance and also involved the stowage of ammunition during the overhaul of ships.

During 1944, a high priority project called *Tiny Tim*, 11.75" rocket, was inaugurated by BUORD. Originally the head for this major caliber aircraft rocket was constructed from a 500-pound AN-M58A, SAP bomb. The bombs were then sent to the Navy Yard, Washington, where they were modified and returned to the Mine Depot as 11.75" rocket heads, Mk 1 Mod 1.

Much of the activity of the depot during the first half of 1945 centered around the loading and assembling of 11.75" rocket heads, Mk 2 Mod 0. By June 1945, the monthly production of these had reached satisfactory levels. In

addition, production loading and assembly of all type rocket ammunition (3" up to 11.75") was a major operation at the station.

The Naval Mine Depot was designated as the chief facility on the Atlantic Coast for serving the fleet with all types of mines during the war. In January 1942 the Mk 12 Mod 1 mines (aircraft planted, magnetic type) made their appearance. The Mk 12 Mod 1 was followed in 1943 and 1944 by assemblies and explosive loadings of various later types of aircraft planted mines. In 1945 the depot supplied mine material and technical assistance in the support of the Strategic Mine Blockade of Japan by the Twentieth Air Force. This operation included the laying of approximately 12,000 mines in Japanese waters and resulted in the destruction of enemy shipping estimated at approximately one million tons.

IN LATE July 1944, the station was informed that BUORD desired to initiate production loading of the British 12,000-pound "Earthquake" bomb at the rate of 150 a month to be reached by the end of August of the same year. These "Tall Boys" presented problems in handling and loading outside the experience of depot personnel. Ten barricaded pits were constructed to hold the bombs in vertical position during loading. The finished bombs were loaded, six to a car, on gondolas for transfer to the port of shipment. Handling gear for the bombs was designed on the station and manufactured at the Washington Navy Yard. The commanding officer was informed by the British Mission that 50% of the bombs dropped during the raid which sank the



German battleship *Tirpitz* were filled at the Naval Mine Depot, Yorktown.

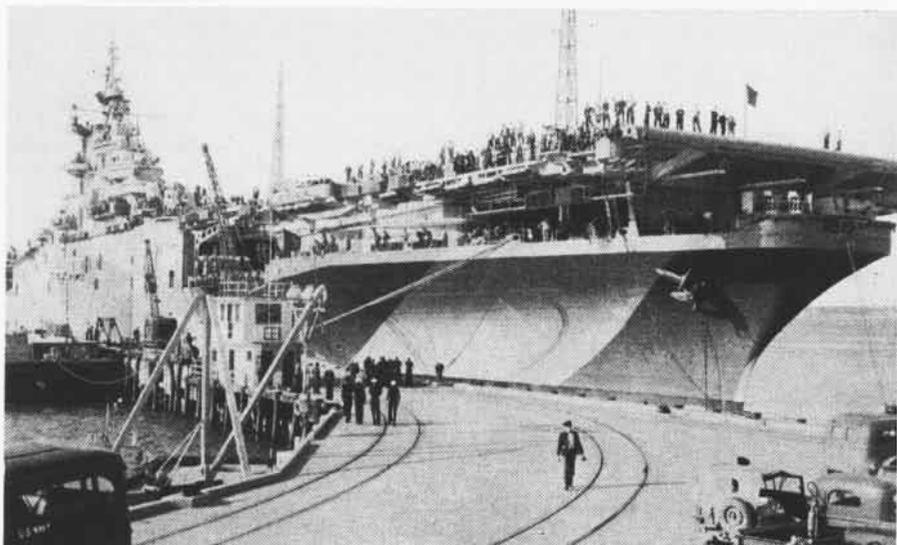
The torpedo shop, constructed in 1940, was primarily for the purpose of servicing ships based in the Norfolk area. Due to the increased tempo of aerial warfare in the Pacific, and the construction of new carriers and escort carriers, aircraft torpedoes were shipped to the depot for overhaul and distribution.

THE MAIN effort of the torpedo shop by 1943 was being directed toward the overhaul and issue of aircraft torpedoes for new carriers and for escort carriers being converted at various East Coast shipyards. In numerous cases the torpedo crews of these ships were assigned temporarily to the depot for instruction in overhaul and maintenance of torpedoes.

As the war progressed, advance base torpedo field units were established and the necessary operating equipment was assembled at this station for shipment. Crews for these units also were sent to the depot for instruction in the use of their equipment prior to assignment to advance bases.

At the conclusion of the war, torpedoes from decommissioned ships in this area were turned into the mine depot for overhaul, preservation and storage.

World War II saw the introduction of a wide variety of new munitions by the Navy, introducing serious problems of new techniques, production control, personnel training, and equipment development. This article has sketched chiefly the physical assistance given to naval aviation; it is fitting also to mention the valuable assistance indirectly rendered by the Research and Development section of the Naval Mine Depot in the development of new explosives and loading procedures. The postwar mission of the depot continues its support of naval aviation, with its activities, of course, geared to the current needs.



USS ANTIETAM GETS WARTIME LOAD OF BOMB TYPE AMMUNITION AT THE YORKTOWN MINE DEPOT



Pictures show steps in making the relief map at NAS DENVER—First S. Slocum and Lt. Lanus discuss patterns to be traced from the basic map. Next Slocum carefully cuts out the patterns which have been copied onto the wax. In picture three, he melts down the layers of wax to form mountains and ridges. Finally Slocum and D. Maddox even up the contours on the map, as Captain H. L. Hoerner, commanding officer of the naval air station, looks on approvingly.

MAPS A LA MODE

WHEN members of the Organized Reserve squadrons at NAS DENVER are invited to take a look at the relief map being constructed in the aviation technical training department, they usually groan "Oh, not another map of the Tokyo region"—and resign themselves to looking at the same type of thing they have seen hundreds of times before.

Their boredom turns to interest, however, when they discover that the map under construction is a terrain map of the Seattle-Tacoma-Vancouver area, which has not, to the best of knowledge, been mapped out before in this particular manner.

Simulating an area of approximately 350,000 square miles, the map is being built, under the direction of Lt. Paul B. Lanus, aviation technical training officer, by J. T. Isabell, ADC, D. F. Maddox, AL1, S. L. Slocum, AO3, and members of the Organized Reserve squadrons at Denver. When completed, it will be used in connection with the ultra-sonic trainer, as a device for training radar operators and pilots.

The Seattle-Tacoma-Vancouver area was chosen because of the variety of the terrain. For purposes of training in

radar, the combination of ocean, flat lands and mountainous country was ideal.

The technique being used, while not new, differs from that employed most often for maps of this kind in that a rubber mold is not used.

In order to provide a map large enough for tracing contours, an airways map was rephotographed by the Lowry Air Force Base Photo Lab and was blown up to the scale of 1/16 inch to 1000 feet. The outline of the countryside was traced off this map onto a large sheet of glass, the base of the map.

The mountains were then constructed of layers of dental wax, carefully cut to size, melted down to give the correct landscape outlines and then covered with oil-base modelling clay.

After the wax and clay had hardened, all the land area was covered with varnish and sprinkled with sand to give the necessary rough surface. Cities were indicated by areas covered with carborundum, and the oceans and rivers were left blank on the map.

The map, when used with the ultra-sonic trainer, will provide valuable training in use of radar for the shore-based Organized Reservists at Denver.

Fasron Licks Water in Gas

FASRON-119, PACIFIC—Operations department has solved the problem of water in gasoline. A tanker recently delivered a cargo of 115/145 gasoline apparently well "loaded" with water. Several take-offs were delayed due to lack of proper fuel.

The problem is being met by meticulous attention to gas trailers, each being sounded by paste indicators prior to filling to insure that it is free of water. After filling, a second sounding is taken. If water is present in any appreciable quantity, a siphon pipe is inserted into the tank and the water drained.

Any residual amount will drain out through the water vent of the internal segregators. Design of the pumping system is such that if water is present the pumps will not function. When this occurs some difficulty may arise in getting them to function after water is removed. A trade secret—reverse the pumps from pumping to suction by shifting the valves, open gasoline hoses and let the system take air. Then shift valves back to pumping. This usually will cause the system to pick up the pumping load in a normal manner.

▲ *BuAer Comment*—The answer to safe and successful handling of gasoline lies in considerably more than handling segregators. Immediate steps should be taken to insure that such amounts of water are detected and separated at the storage point and not delivered to trucks.

Stud Removal Jig Developed

VR-4, MOFFETT FIELD—Broken ignition harness studs (P/N 86-H-10-344) on the R-2000 engine have sometimes resulted in the necessity of an engine change, because of either inability to remove and replace stud or accidental serious damage to the engine nose section. The combination of dealing with a particularly stubborn broken stud in the haste of trying to make schedule or having to do the job outside in bad weather or in the dark called for a sure-fire fix which would eliminate the need for an engine change provided no irreparable damage to engine resulted from attempts to remove the broken stud.

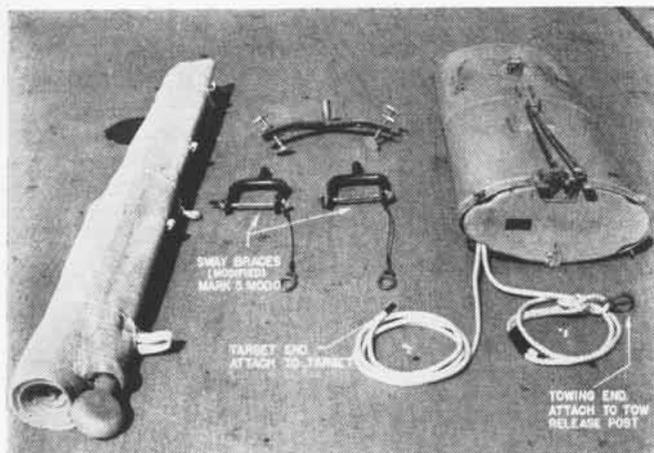
The fix consists of two locally manufactured stainless steel brackets, one of which is secured to a pair of hold down studs at the adjacent cylinder and the other to a stud on the nose section reduction gear housing. The latter bracket has welded to it a 5/16-24 nut, while the former is merely drilled to accommodate a 5/16 cap screw.

The final assembly consists of bracket (with nut welded on), ignition harness bracket, and drilled bracket, all held together by a 5/16-24 cap screw (with drilled head for safetying). The fix has been employed eight or ten times in the past several months with good results. Savings in man-hours, material, and gray hair are considerable.

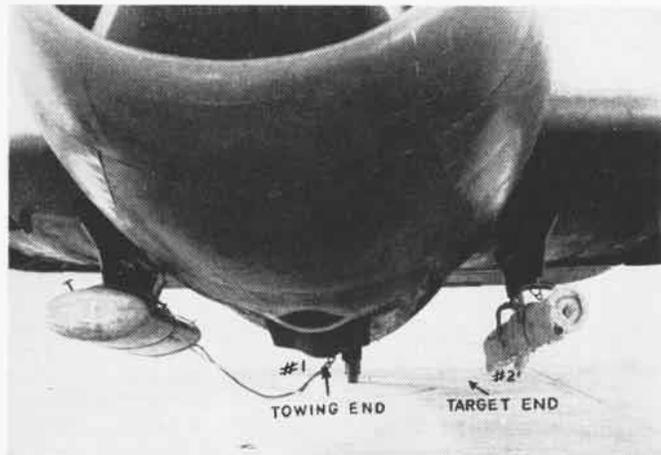
One complete fix assembly and associated drawings will be furnished to any squadron on request.

▲ *BuAer Comment*—A modification instruction is in process of being issued which requires that a shockmount bracket incorporating flexible construction to eliminate stresses be installed to secure this type ignition harness developed at Moffett.

New Banner Target Launcher



THESE MATERIALS MAKE UP NEW BANNER LAUNCH SYSTEM ON CV PLANES



CAN ON LEFT HOLDS TOW CABLE, WITH BANNER ROLLED IN BRACES, RIGHT

BUAEr has taken a long step toward eliminating the danger of using banner gunnery targets by developing a system of launching them when the tow-plane is airborne instead of dragging the target off the ground.

Many a plane has come to grief over a period of years because the pilot pulled up too sharply trying to get the target up without dragging it so that it tore or the cable abraded. Many a pilot got a better gunnery score on a banner than he should have because pebbles on the ground put holes in the banner before it was airborne.

BuAer Armament Division has developed a system of launching the banner from one bomb rack while the tow cable is fed out of container on another rack. The method can be used on F6F, F7F, F8F, SB2C planes and on F4U's equipped with Mk 51 bomb racks equipped with a center line tow release post or center line bomb rack.

Equipment required for the installation is all standard stock and consists of: tow target container, Mk 1 Mod 2, R 94-BUO-394774; two sway braces, Mk 5, and one Mk 7 sway brace; 900' of 7/16" nylon rope, R 21-R-579-20; 1

banner target, A6A or A10 R 94-AC-41G8831 or R 94-AC-42G11567-1; webbing, safety tow, assembly, R 94-W-90800; 2 target release rings, Mk 7, R 94-BUO-99420.

Modifications to the tow target container consist of the removal of the hatch release line and pin, and the two bungee cord ejectors located in the mouth of the container. The Mk 5 sway braces are modified by bending the arms into a U shape, with a distance of 5½" between the arms. This distance is not critical, but care should be taken to insure that the banner target, when rolled for launching, will fit easily into space between.

A length of ½" bungee cord is fastened between the arms to hold the target in place and aid in ejecting it on release of the tie cables. The tie cable assemblies consist of a length of tow cable, one end of which is attached to the sway brace arm, the other to a Mk 7 Mod 1 target release ring. Overall length of each cable and ring is 17¼".

The container is loaded in a normal manner except that the target end of the line, as well as the towing end, is retained outside the container. Both ends of the line should emerge from the inboard side of the

container when mounted on the plane, and be only of sufficient length to reach the plane tow release and the target, respectively, when mounted on the bomb rack. The container hatch is closed and secured with light breaking cord.

INSTALL the target container on the wing bomb rack and attach the towing end of the line to the tow release. Attach the modified sway braces to the opposite wing bomb rack and load the banner target into the sway brace arms. Push the target firmly up against the bungee cords, draw the tie cables under the target and fasten the release rings to the bomb rack suspension hooks. Attach the target end of the line to the bridle eye of the target. If desired, a length of safety tow webbing can be used.

Launching procedure conforms to standard practice. A climbing, standard rate turn should be made to launch at an indicated airspeed of 85-95 kts. This turn should be toward the side on which the banner is carried. This attitude should be maintained until the target is fully streamed.

Jets Keep Radar Men Busy

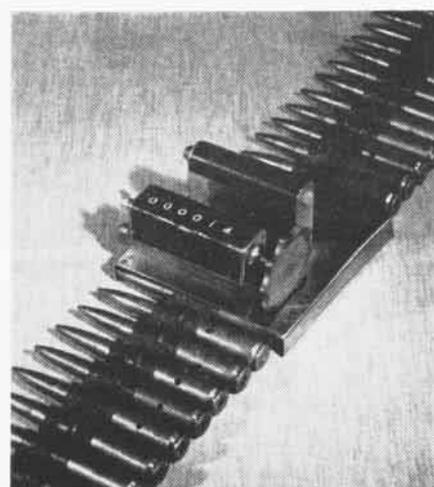
MACG-1, CHERRY POINT—This ground control intercept squadron made two demonstrations recently on separate occasions for Admirals Blandy and Duncan who visited the station.

Both radar intercept demonstrations were highly successful, with the "bogey" being splashed quite a distance from Cherry Point. All transmissions were piped into a loud-speaker, including the instructions from the radar operators in the rear cockpit of the F7F's to the pilot of the F7F. In this manner, Admirals Blandy and Duncan were able to follow the demonstration from beginning to end.

In operating with jet aircraft, this squadron has found their high speed makes controlling a little more difficult than with conventional planes. The radius of turn, overtaking speed, and closing speed must be considered carefully when controlling jets. A controller really has his hands full when two jets are closing at a rate of 12 miles a minute. Decisions have to be made quickly.

New Ammunition Counter

NARTU SEATTLE—A simple and efficient device for counting belted ammunition has



AMMUNITION COUNTER DEVELOPED AT SEATTLE

recently been developed by H. J. Downey, AO1, of Seattle NARTU ordnance shop.

This ammunition counter can be run over a belt of ammunition to accurately count each round. Its value is two-fold; it speeds up line operation, when the accurate computation of rounds fired is required, by counting the unexpended rounds, and, when belting ammunition, the belting machine can be run continuously and the counting device used for breaking the belt at the desired length. This cuts down stoppage of the belting machine, which in turn decreases wear and tear.

The ammunition counter is simple to construct and is easily manufactured by mounting a counting machine with a star-wheel on a piece of stainless steel, shaped to slide over the belt of ammunition as shown in the above picture.

To operate the device, handle (forward of counter) is gripped and machine is run along belt. The forward end of the machine flares out slightly for easy operation.

Hydraulic Test Stand Built

VP-ML-5—Confronted with the problem of an outmoded hydraulic test stand, G. A. Byington, ADC, assisted by H. G. Hill, ADI, R. W. Henderson AM3, and O. N. Smith, AM2, all attached to Medium Patrol Squadron Five, proceeded to remodel and practically reconstruct the existing equipment.

The stand contains all necessary attach-



REMODELED TEST STAND WITH ITS DEVELOPERS

ments for the complete hydraulic test of any aircraft employing a system pressure of 3000 lbs. or below. An advantage of this stand is the individual testing of any separate unit or cylinder of the planes's hydraulic system without its removal from the plane. Up-bleeding of brake lines is another easy task for this equipment.

▲ *BuAer Comment*—A test stand of 3400 lbs. is available from supply channels.

Photos Speed Overhaul Job

VMSS-12, EL TORO—This service squadron has found a way to get around the difficulty of building up quick engine change units with new inexperienced personnel and five different types of engines to work on.

The difficulty was due to various changes in oil lines and electrical conduits of each type of engine which are not as yet covered in erection manuals. This has been solved by having large photographs, from different angles, made of the built-up accessory section, one for each type engine.

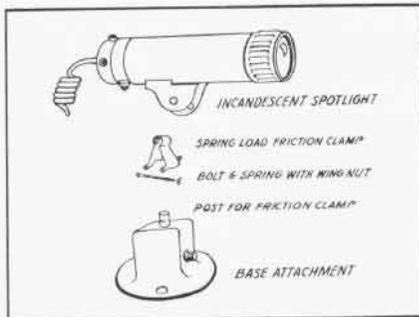
The photos are posted conveniently on the walls for ready reference. Personnel, by tracing lines on these pictures, work more efficiently and save the experienced men's time.

Gold Is Where You Find It

NAS ALAMEDA—Gold has been found in California, this time right on the station at Alameda. In addition to gold, platinum and silver deposits have been located.

The costly metals will be extracted—but from radar tubes, magnetos, aircraft instruments and electronics equipment. It is all part of the station's mammoth salvage program. Reclamation of the metals was planned when it was learned that radar tubes, previously sold to the public for 15 cents each, contained \$2.50 worth of gold.

The process of recovering the precious metal is inexpensive and simple. Several tanks containing strong acids will penetrate the solids, such as platinum deposits on ignition aircraft parts, and separate the metal from the object. The costly slush ladled from the chemical tanks will be refined at the San Francisco government mint.



THREE PARTS TO DEMOUNTABLE COCKPIT LIGHT

Spotlight Useful in Corsair

VMF-311, EL TORO—Several pilots suggested that an emergency cockpit light be installed in F4U-4 aircraft after several failures of cockpit or instrument lights during night operations. The S-2 department worked out a fix that provided a lamp that could be snapped on or off base easily.

The ancient procedure of fumbling through the flight harness for the flashlight normally carried by the pilot is not always conducive to flight safety or comfort.

An incandescent spot light (such as Item #582, Stock #R17-L-7453-25) was modified by replacing the extension cord and spring loading the friction clamp to facilitate snapping it off the base. It can be installed on the side of the radio console control panel forward of chartboard stowage space, on the side of the electrical control box opposite the volt-ampere meter, or on the side of the inclined panel immediately below the cowl flap switch.

The extension cord of the light was of the CX-922/AR coiled type, minus junction box and special jack, and connected to the electrical circuit so as to be independent of the cockpit lighting system entirely.

Marines Drop Aerial Packs

VMR-152, EL TORO—As a result of a training program for pilots, this squadron has worked out good technique in dropping para-packs from R5D aircraft, theoretically in support of ground troops.

The para-packs were dropped from 400 to 800 feet at airspeeds from 120 to 150 mph. Four drops were made using the M-1 (15") plastic, A-4, A-5, and A-6 cargo containers with standard 24' cargo parachutes.

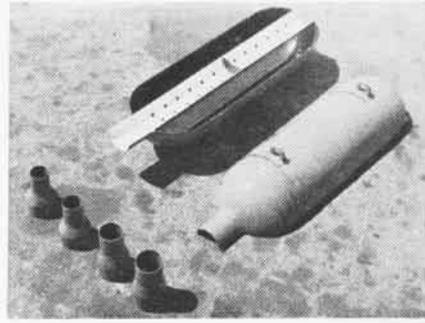
The forward half of the main cargo door was removed prior to take-off. Crew members who jettisoned the para-packs wore back-pack-type chutes. To eliminate any possibility of their falling out of the aircraft, they were secured to the bulkhead opposite the cargo door with lines long enough to



PLASTIC CARGO CONTAINER FLOATS FROM PLANE

give free movement to within reaching distance of the door.

The intercom system was used to give the standby signal, and a long ring of the emergency bell gave the signal to jettison the pack. One 10' and three 15' static lines were used. Chutes cleared the aircraft and appeared to open 25' behind and below the stabilizer. In future drops, 15' lines will be used.



PRESTO AND WATER FILLED BOMB IS MUFFLER

Water Fills Make Mufflers

NAS SAN DIEGO—Modification of salvaged and excess 25 lb. water bombs to mufflers for use on standard trucks and pick-ups has been effected at a cost of \$1.50, whereas the average purchase price is \$4.50. Considerable time and expense is saved in the modification of these mufflers in the transportation department.

Deck Cover Cuts Down Wear

Results of tests on wire rope which was installed on the *Midway* with a new experimental flight deck covering installed have indicated this covering is satisfactory in cutting down wear on arresting gear cables.

The original nonskid deck covering, resembling emery paper, proved hard on the cables, wearing them out prematurely. BU-AER has recommended to BU-SHIPS that the new material, made by Minnesota Mining & Mfg. Co., be installed on all CVB-41 class flight decks subject to confirmation by the ships that the covering is satisfactory from an operational viewpoint.

ACAG-11—This air group is now operating aboard the USS *Valley Forge*. Personnel of the ship and the air group are proud of the safety record chalked up during the first two months of their operations together. Only one major accident has occurred—an SB2C barrier crash in which no one was injured.

VR-6 Pilot Devises A Hood

VR-6, PACIFIC—A new-type instrument hood has been invented by Lt. Buergey for use in the R5D which he claims gives better forward vision for the safety pilot and better utility over existing designs.

The general shape is that of a trapezoid with holes made for the pilot to see the magnetic compass and cylinder head temperature gauges. The hood is attached to a bungee cord stretched across the pilot's compartment from the left side window latch pin to the right side pin. Width of the hood restricts all forward vision of the pilot.

The hood can be released from either side and can be used on either side of the compartment. When not in use it drops harmlessly to either side of the compartment.



SUPPLY NEWS

FROM ASO AND SUPPLY DIVISION BUAER

Same Item, Same Name

The Aviation Supply Office has been deputized to represent the Bureau of Aeronautics in connection with the Munitions Board Catalog Agency Program, for the standardization of item identification throughout the United States Armed Services. The work entailed is being accomplished by the newly formed Patterns and Description Division of ASO.

The mission, magnitude and general nature of this armed services "cataloging" program were covered by the following press release from the office of the Secretary of Defense:

Development of a common catalog system and standardized equipment for the armed services is now under way, Mr. Thomas J. Hargrave, Chairman of the Munitions Board, announced. Orders have been issued establishing the Munitions Board Cataloging Agency and the Munitions Board Standards Agency. The task of the cataloging agency is to coordinate the efforts of the Army, Navy, and Air Force in the construction of a uniform catalog of all items used by the military establishment in peace and in war. Each item will be provided a single name, description, and identification number, and will be classified in but one supply commodity class.

The function of the standards agency is to develop unified agreement on national military establishment specifications and engineering standards, and to develop agreements among the Army, Navy, and Air Force on standard designs of equipment and component parts.

VALUE OF SINGLE CATALOG

Emphasizing the prime importance of achieving a single catalog for the armed services, on May 12, the Secretary of Defense wrote to the Secretaries of the Army, Navy, and Air Force:

"I consider it necessary at this time to bring to your attention the great importance I attach to the Armed Services Cataloging Program which has been placed underway by the Munitions Board. It must be understood clearly that I consider the project to be of primary importance to the effective conduct of the business in the military establishment; that I believe it will lead most positively to a simple and well understood approach of the three services to industry, and that I believe its proved results in segmental fields which have been explored demonstrate conclusively such great savings to the taxpayers in the processes of procurement that we in the military establishment must not fail to prosecute the project with the utmost vigor, and to secure at the earliest possible date the fullest and most complete utilization of its possibilities.

"Lest there be any misunderstanding of the purpose and any ensuing deflection of effort, the following definition covers what

I conceive this cataloging program and its objectives to be.

"The ultimate objective will be to name, describe, classify and number each unique item used, purchased, stocked, or distributed by the military establishment, by such methods and in such manner that only one distinctive selection of letters and numerals will identify the same item within a bureau of service, or between the Departments. The single item characterization will then be used for all functions of supply from original purchase to final field or area of distribution. When the project has advanced sufficiently, each supply system of the services will select for its own use such categories of items from the central pool as it needs to meet its own purposes, and publish these in such forms as will best further its purposes, but individual identical items will bear the same characterization in every catalog segment thus prepared and used.

EXTENT OF PROJECT

"It is estimated that the project will comprise the processing of some 5,000,000 items of military usage. In segments and areas of interest, many of these items have already been described and classified, and the project program must integrate the work already done by the bureaus or services with the least friction, and assign the uncovered areas for field work to the most cognizant agencies.

"It is obvious that the project is expensive; that it will be a burden on the personnel and appropriations of every bureau and service, and will require the most earnest and cooperative effort on the part of every agency to bring it to such substantial completion that it will be continually useful to all. There is being developed under the Munitions Board a coordinating central agency to pick up work already done, to assign new areas for field work, and to eliminate duplication where the same item has been described in two or more category assignments. Purely as an estimate, three years has been set as the time necessary to bring the cataloging program to full utilization. If that goal can be met, we must reach it. We cannot afford to enter a future national emergency without having the military cataloging system so well completed, so well understood, and so well accepted, but that we will reap the full benefits which can be expected from it. Heretofore, the military services each maintained different cataloging systems, a factor which made interchange of supplies and equipment difficult, and impeded coordinated military procurement. Natural duplications which occur because of the differences in the catalog system will be eliminated in the process of developing the uniform catalog system. It is estimated that the process will eliminate about 50 percent of the five million catalog items concerned in the project."

LOGISTIC GODSEND

In announcing the establishment of the

two agencies, the Chairman of the Munitions Board stated:

"A common catalog of military items and standardization of military equipment will enhance the combat efficiency of the armed services immeasurably. They are absolutely essential components of efficient and coordinated procurement now being achieved for our military establishment.

"Development in these fields is required in methodical industrial mobilization planning. Standard specifications will assist manufacturers in production activities and will provide for more expeditious inspection of products. A common catalog will speed up procurement contracting considerably, and will be of enormous assistance in inventorying. Ultimately these programs will contribute toward the achievement of interchangeability of supplies and equipment among the combat units of the three services in the field. From the logistics standpoint, the common catalog and standardized equipment will be a godsend. They will mean easier and less costly storekeeping, great reduction in required shipping and storage space, and will expedite supplies to our men in combat during wartime.

"When our armed services have achieved these two objectives, the nation will have unified our fighting equipment as it has unified our fighting men."

Navy To Get New Piasecki

BUAER has instituted procurement of five modernized versions of the HRP twin-rotor helicopter built by Piasecki, to be known as the HRP-2. The main difference between this model and the HRP-1 is the modern all-metal fuselage which will replace the fabric-covered fuselage.

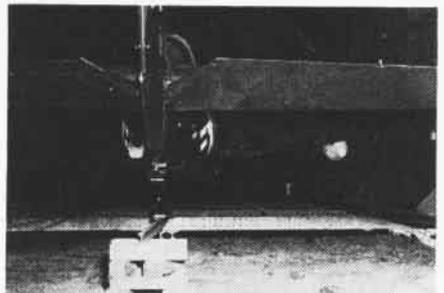
The cockpit is arranged so that the pilot and copilot are seated side by side. A static test fuselage is expected to be available by December and production deliveries by next summer.

San Diego 'Cans' Aircraft

NAS SAN DIEGO—The first group of airplanes here to be preserved in the Navy's new "canning process" were put into their dehumidifying chambers on 10 March.

Facilities for preserving 488 planes are being built by Public Works department and about one-third of the total number of containers for the station have been completed and ready for operation.

Aircraft engines and all unpainted metal surfaces are coated with a preservative before being placed in the cans which maintain a constant circulation of air with a maximum of 25% humidity. The new process is expected to preserve the planes for three or four years.



WHEELLESS 582C RIDES RAILS INTO ITS 'CAN'

SERVICE TEST

INTERIM REPORT DIGEST

This digest covers the 15 July Interim Report of Service Test, NATC PATUNENT, and does not necessarily reflect BUAE policy.

FJ-1 (97 Hours)

Damage to aircraft resulting from previous collision with tree top repaired and two flights made. After 36 minutes in air on second flight, the plane crashed. Plane was demolished and pilot killed. Cause of crash and reason for pilot failing to parachute are undetermined.

F4U-5 (178 Hours)

Aircraft has flown 119 flights; fuel, oil, and oxygen consumption tests are in progress. **Engine Starting.** Since the installation of MCR36 which permits excess fuel to be drained free of aircraft, no further fires on starting have occurred in vicinity of carburetor air box drain line.

AD-2 (77 Hours)

Exhaust System Clamps. Eleven additional clamps, including three of the new type, P/N 21765-750-3,188, have broken. Clamps continue to fail after 1 to 15 hours operating time. Believe many clamp failures are due to poorly fitting exhaust stack stand-off brackets. Improved clamp assemblies supplied by Douglas have been installed.

Support Brackets. After 77.5 hours engine operating time, two exhaust stack stand-off support brackets, P/N 5258899-84 and -98 were found broken. Breaks occurred between holes used to secure brackets to cylinder. There was a clearance of 1/16" between the stack and the after stand-off bracket, bolted to No. 3 exhaust ear, and a clearance of 3/16" between the stack and the one bolted to No. 17 intake ear. Generally the stand-off brackets do not conform to the contours of the stacks. This results in improper stack support and failure of the exhaust stack supports and clamps. As temporary fix stand-off brackets are being shimmed and bent to better fit the contour of the exhaust stacks.

Cowl Ring. One rear cowl ring support bracket installed on No. 9 cylinder was found broken and another installed on No. 11 cylinder was found to have elongated attachment holes. *Recommend* that contractor design a stronger support bracket.

Oil Drainage System. Lower cylinder oil drainage system on AD-2 has proved unsatisfactory to date. After 10 to 15 hours engine operation, the drain lines become clogged with carbon deposit which allows oil to accumulate in lower exhaust stacks. Approximately a pint of oil is discharged through exhaust stacks on initial engine starting after a 12-hour idle period. Following discrepancies have been noted in drainage system:

1. All three manifold support brackets

were broken. New brackets manufactured from same material, but of twice the thickness, were installed.

2. Three of the line supporting clamps were broken and were replaced with steel clamps, P/N AN-742-4.

3. All drain line elbows near the exhaust stacks were plugged with carbon deposits.

To prevent clogging of the drain lines adjacent to exhaust stacks, *recommend* that initial drop from exhaust stacks to elbow in drain line be increased to maximum permissible length within installation space available; that tubing size be increased from 1/4" to 5/16"; and that self-draining tank similar to the AD-1 installation be incorporated.

Engine Oil Tank. Inspection of oil tank mounting showed lower right sway brace bent at adjustment end. Bottom rubber washers for both forward oil tank shock mounts were convexed 1/8". No excessive positive accelerations have been reported by project pilots. *Recommend* that contractor investigate and correct discrepancy.

Generator Installation. Conduit from generator chafed against the oil tank near generator end of conduit. Outer layer of conduit braid was worn through and oil tank was worn to a depth of approximately 1/64". To correct this, a 90 degree elbow was installed on generator terminal box, which moved conduit toward right hand side of engine. This elbow permits generator conduit to clear oil tank. *Recommend* that this corrective action be taken on all AD-2 aircraft.

Electrical Conduits. Numerous conduit assemblies in accessory compartment have been replaced because of improper swaging of conduit end fittings. *Recommend* that contractor investigate and improve method of swaging conduits to end fittings.

Thermocouple Leads. Automatic cowl flaps thermocouple wires pass over engine instrument junction box which is located on right side of engine mount adjacent to foot-step used by maintenance personnel. Because junction box and foot-step are very near each other and in same plane, there is tendency for maintenance personnel to step on thermocouple wires where they pass over junction box. *Recommend* that wires be rerouted beneath junction box.

Fuel Transfer Line. During flow check of carburetor, the metered fuel transfer line, P/N 361482, was found to penetrate tubing end seal only 1/8". This line was replaced with new transfer line 3/8" longer than original line. *Recommend* that metered fuel transfer lines be inspected for this condition not later than next 30-hour check. Minimum penetration of 3/8" is considered necessary to eliminate possibility of tubing end seal work-

ing free of tubing end and causing fuel leakage at this point.

Electrical Ground Terminal. During routine 60-hour inspection, wire, NS1A12, connecting airframe ground terminal to terminal 16 of filter, F8/AR, was found to have all insulation burned off. Following leads are grounded on same terminal: NP4A18—ground for DC voltage regulator; NP8A2—ground for power receptacle; NP5A2—ground for generator; NS1A12—ground for filter F8/AR.

Believe that a feed back to ground from previous generator failure was responsible for excessive current to ground through wire NS1A12. Resistance of .003 ohms to ground was read between the airplane ground terminal and airplane structure. Because of the large number of wires using the airframe ground terminal, together with resistance existing between ground terminal and airframe, the feed back from generator probably took the path of least resistance through wire NS1A12 rather than being shunted to ground through the airframe ground terminal.

To eliminate recurrence, wires NP4A18 and NS1A12 were removed from airframe ground terminal and relocated on a new airframe ground terminal located approximately 3" from the original ground terminal.

AM-1 (315 Hours)

Powerplant. After 182.1 hours engine operating time on BuNo. 22266, local flight was terminated because of high oil temperature of 100° C and slight drop in oil pressure. Examination of main oil screen showed accumulation of excessive steel particles, necessitating engine change.

New powerplant quick change unit is being assembled for installation on BuNo. 22267 to replace unit transferred to BuNo. 22266. Progress in assembly of quick change unit is being impeded because of unfamiliarity of maintenance personnel with the build-up of the quick engine change unit and because of non-availability of minor AM-1 installation parts.

P2V-2 (152 Hours)

Aircraft has completed 50 test flights. Percentage of military and normal power requirements is being doubled during second 100 hours.

Three cylinder changes were made on starboard engine as result of concentric groove valve seat failures. Seven cylinders on port engine were found to be losing compression, necessitating a complete engine change.

Sleeve Assembly. Cowl flap actuator shield sleeve assembly, P/N 13926-9, is attached to engine mount shield and protects cowl flap actuator from engine exhaust. After 120 hours, cracks were discovered in the collar of four assemblies. Collar of the fourth assembly cracked completely around the sleeve. New collars were constructed of heavier gauge steel and welded to sleeves of failed assemblies.

As test fix of an original assembly, a reinforcing back-up disc was fitted over the surface of its present collar and secured to engine mount shield with the assembly by the attaching screws. This test fix will be observed closely and compared with performance of repaired assemblies as well as with remaining satisfactory sleeves. *Recommend* that collar, P/N 13926-4, of this assembly be manufactured of heavier gauge material.

Nose Access Hatch. With hatch in open position the strut latch is exposed and subject to accidental releasing. It is unlocked by depressing extended lever of the latch. *Recommend* that improved latch be provided.

Governor Head. After 112 hours, the starboard propeller would not shift from low pitch (high rpm). Inspection of governor head, Eclipse type 1506-1-E, showed an open circuit in the "decrease rpm" field of the motor.

Hydraulic Pressure Gage. After 120 hours, a hydraulic fluid leak developed at pilot's instrument sub panel. Investigation showed a minute hole in the bourdon tube of the gage.

Magnetic Standby Compass. Instrument is not illuminated in any way and is impossible to read at night. Use of one of the pilot's spot lights mounted overhead is impractical, as these are designed for downward illumination. *Recommend* that manufacturer comply with para. 804a of NavAer SD-344-2A requiring that all instruments be illuminated so as to be readily visible for night flying.

Cylinder Valve Seat. At 100 hours test time, valve seat in No. 4 cylinder of port engine failed. Leakage and burning had occurred between the two rings of the concentric groove valve seat at a point in line with rear spark plug and center of exhaust valve. Exposed edge of seat retaining ring burned away in a crescent shaped area extending $2\frac{1}{2}$ " around its circumference and for 75 percent of its depth in cylinder.

Nacelle Tail Cone. Fatigue cracks appeared in top skin of cone assembly, p/N 132191. Cracks radiated from aftermost rivet in fore and aft stiffener on each side of wing station No. 150. Failures were identical on both port and starboard cones. *Recommend* that contractor provide better internal stiffening for top skin of assembly.

Prop Feathering Motor. During a routine propeller feathering operation in flight, starboard pump feathering motor overheated and failed. New pump was installed and investigation showed that pressure cut-out switch did not open upon reaching 1000 psi. Motor was stopped manually at this point. Disassembly of cut-out switch showed a worn crescent-shaped spot on the end of the pressure piston. This wear indicated that the spring had been working against the undercut face, rather than against the shoulder which forms the spring seat. *Recommend* that shoulder upon which the pressure spring rests, be cut back farther from the end of the piston and the end be chamfered so the spring will remain seated upon the shoulder.

Hydraulic Seal. Four hydraulic leaks have occurred during the first 150 test hours. All leaks occurred where AN-902 gasket was used. When this type gasket is used on threaded fittings with a jam nut, inside edges of the flat gaskets engage with the threads between the fitting and the nut. This subjects the gasket to cuts and tears which are not apparent until failure occurs. Leaking flat gaskets were replaced with "O" ring packing type AN-6227. With the "O" ring type packing, no thin edges exist to be chewed by the mating threads. *Recommend* that flat gasket type AN-902 be replaced with "O" ring type packing.

Anti-Icer Pump. Windshield anti-icer pump failed after 129 test hours. Teeth were

stripped from driving gear and its shaft mutilated by flexible drive coupling. Powdery deposits, showing evidence of corrosion, were found in minute quantities in passages of the pump. Believe that some foreign material caused binding of gears and ultimate failure of pump. *Recommend* that drive coupling between motor and pump incorporate a safety shear link or pin to protect internal parts of pump.

Cylinders. During normal rated power operations, an appreciable loss of power from port engine was noticeable. Inspection revealed seven cylinders, front and rear row, to be losing compression through the exhaust valve or valve seats. Inspection of one of the cylinders showed that valve seat floated loosely in the concentric groove seat retaining ring. *Strongly recommend* that engines equipped with the latest modified exhaust valve seats be furnished as soon as practical to replace those in use.

During maximum cruising power operations, starboard engine backfired through the induction system and severely damaged aircraft in area of accessory compartment. Three backfires occurred before propeller could be feathered and engine stopped. Inspection showed that exhaust valves and seats had failed in three cylinders. In cylinder No. 6 the exhaust valve face had chipped, accompanied by considerable burning away of the valve and valve guide boss. Cylinder head also cracked in line between exhaust valve center and rear spark plug. In cylinder No. 17, breakdown of valve and seat had just begun, while in cylinder No. 16, the failure had progressed farther.



BOOKS

Air Victory: The Men and the Machines. Harold B. Hinton. Harper, 1948, \$5.

The AAF Against Japan. Vern Haugland. Harper, 1948, \$5.

Army Air Forces in World War II, Volume I, Plans and Early Operations (January 1929 to August 1942). W. F. Craven and J. L. Cate, editors. Chicago University Press, 1948, \$5. (This volume, first of seven in preparation by the Office of Air Force History, deals with preparatory plans and early operations in all theaters. A valuable reference source, the book makes a distinguished contribution to the history of the war.)

MAGAZINE ARTICLES

The "Nene" Passes with Honors. *Aero Digest*, July 1948, pp. 26, 27, 114, illus. (Pratt & Whitney tests on Rolls Royce jet engine.)

Grumman "Panther" Carrier Fighter with Claws. *Aero Digest*, July 1948, pp. 28-30, illus. Navy's Week-End Warriors. Cy Caldwell. *Aero Digest*, July 1948, pp. 37, 38, 100-105, illus.

"Take It Easy, Cy." "Admiral Firecracker." *Aero Digest*, July 1948, p. 39. Reply to Cy Caldwell's article "Defense of the Navy" in May *Aero Digest*.

New Model Jet Fighters. *Aero Digest*, July 1948, pp. 42, 43, 114, illus.

Jet Engine Test Laboratory. *Aero Digest*, July 1948, p. 46, 47, illus. (General Electric's test center.)

Gas Turbine Fuels and Lubricants. H. A. Murray & B. S. Bailey. *Aero Digest*, July 1948, pp. 58-60, 95, 98.

Automatic Aircraft Control. James L. Anast. *Aeronautical Engineering Review*, July 1948, pp. 20-24.

Air Affairs Are Your Affairs. William D. Partridge. *Air Affairs*, July 1948, pp. 293-313. Atom Bomb: "Miracle" or Catastrophe. Lewis Mumford. *Air Affairs*, July 1948, pp. 326-345.

The New Air Force. Ned Root. *Air Force*, July 1948, pp. 12-17, illus.

The Situation in Reverse. William S. Friedman. *Air Force*, July 1948, pp. 26-28, illus. (Reversible propellers.)

Custer Channel Wing. John Forney Rudy. *Air Trails Pictorial*, June 1948, pp. 22, 23, 83, 84, illus. (Flies like a lightplane and lands like a helicopter.)

U. S. Air Force Helicopter Development. G. F. Champlin. *American Helicopter*, July 1948, pp. 14-16, 22, illus.

X-1 Flights Proved Research Data. *Aviation Week*, June 28, 1948, p. 13.

Track Gear Promises High Utility. Alexander McSurely. *Aviation Week*, July 5, 1948, pp. 21, 22, illus. (Caterpillar landing gear for large planes.)

What's Ahead for Rockets? *Aviation Week*, July 5, 1948, p. 23.

USAF, Navy Step Up Jet Engine Buying. Robert McLarren. *Aviation Week*, July 12, 1948, pp. 11, 12.

Magnesium As a Weight Saver. *Aviation Week*, July 12, 1948, pp. 21, 22, 24, 25.

Raising Turbine Inlet Temperature. Robert McLarren. *Aviation Week*, July 12, 1948, pp. 27, 28.

NACA Shows Ames Laboratory Progress. Robert Hotz. *Aviation Week*, July 26, 1948, pp. 11, 12.

XS-1: Design and Development. Robert McLarren. *Aviation Week*, July 26, 1948, pp. 22-27, illus.

Unification Is a Flop. Michael H. Frolich. *Flying*, August 1948, pp. 16, 17, 70.

The Air National Guard. Col. W. A. R. Robertson. *Flying*, August 1948, pp. 18, 19, 68, 69.

The Tactics of Suicide. Robert W. Marlowe. *Flying*, August 1948, pp. 20, 75. (Air ramming is sure way to stop enemy bombers.)

Are Single-Seat Fighters Out? Malcolm Cagle, Lt. Cdr., USN. *Flying*, August 1948, pp. 32, 33, 74, 75.

The AF's New Designation System. Charles O. Probst, Maj., AFR. *Flying*, August 1948, pp. 36, 37, 56. (Air Force plane designations reshuffled.)

How Strong Is Russia? Hanson W. Baldwin. *Marine Corps Gazette*, July 1948, pp. 8-17, illus.

Optics, a New Science Vital to Aeronautics. *Plane Facts*, June 1948, pp. 7, 8.

Hamilton Standard's Hollow Steel Blade. *Plane Facts*, June 1948, pp. 10, 11, 32, illus.

Jet School for Airmen. Jerry Leichter. *Skyways*, August 1948, pp. 14-16, 40, 48, illus. (USAF jet training at Williams Air Force Base, Chandler, Arizona.)

Will the Prop Disappear? Victor Boesen. *Skyways*, August 1948, pp. 26, 27, 41, 53, 56, illus. (Despite jet propulsion, prop still has major role.)

XF-85 Parasite Fighter. *Skyways*, August 1948, pp. 30, 31, illus.

Compressibility Sense. *Skyways*, August 1948, pp. 59-63, illus. (Reprinted from Navy publication.)

The Dawn of the Supersonic Age. Dr. Hugh L. Dryden, NACA. *U. S. Air Services*, June 1948, pp. 11-14, 24.

The ABC's of Arctic Survival. Alaskan Air Command, Fort Richardson, Alaska. *U. S. Air Services*, June 1948, pp. 16, 17, 25.

Development of Naval Night Fighters in World War II. Cdr. James Seton Gray, Jr., USN. *U.S. Naval Institute Proceedings*, July 1948.

AVIATION ORDNANCE

INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE



BUCK ROGERS NEVER DREAMED OF THIS MISSILE; DAHLGREN BRAINS POINT THE WAY TO THE FUTURE

Guided Missile Is Unveiled

Among the more secret of the guided missiles being developed has been the program carried under *Project Hobby Horse*. The project has been so secret that very few people in Bureau of Ordnance were aware of it. But now all wraps are off and the world is entitled to know of this great device.

The prototype missile was originated, developed and tested at Naval Proving Ground, Dahlgren, Va., for an exhibit and required the expenditure of several man-hours work by very specialized personnel in addition to a large outlay for materials (scrounged).

The missile is very versatile but is intended chiefly for ground to ground use. No basically new principles are involved in the theory of operation, but an amazing number of old principles have been dug up to be applied in ways previously unheard of.

Guidance is similar to the *Kamikaze* system. Propulsion is similar to the *Kiddie Kar*. A communication device is provided which is limited only by lung power. A standby system is provided for greater distance or to overcome bronchial disturbance, consisting of headphones which may be plugged in to any handy radio containing a receptacle. Performance figures are still secret but the speed is at least a minimum.

Tests proved the missile performed satisfactorily and achieved its purpose by providing continued enjoyment and amazement. The missile stands ready for immediate production and will take its proper place in the preparedness program.

Aviation Ordnance List Out

Revision "F" to NavOrd List 20870, aviation ordnance equipment allowance list for

aircraft has been distributed to the Fleet. This 55-page publication sets forth the allowances of service and spare service equipment, maintenance and accessory equipment required for the support of aircraft operations for a 90-day period under the most rigorous operating conditions.

All combat aircraft, including fighters, attack planes and patrol planes now in service or in production and expected to be available in the near future are included. It is to be noted that allowances for F9F, F6U, and F2H aircraft are not shown. An interim allowance list covering these aircraft will be issued prior to the date they are assigned for service use.

Subsequent to the release of this list action had been taken to change the number of aircraft assigned to VF and VA squadrons. Accordingly, it will be necessary to tailor the several allowances in proportion any resulting fractions to be advanced to the next larger whole number. Subsequent revisions of this list will reflect such changes.



PLANE FUEL TANK BURNS BRISKLY AT DAHLGREN

Tank Test Stops That Leak

One of the routine assignments of the Aviation Ordnance Department of the Naval Proving Ground is the testing for the Bureau of Aeronautics of self-sealing fuel cells designed for use in naval aircraft.

New types of sealants and construction are being developed by various rubber companies, and tested by gunfire and shell fragments. The accompanying picture shows a cell which caught fire during the test. Every effort is being made to develop a self sealing fuel tank which will give maximum performance for minimum weight.

Dahlgren 'X-Ray' Gun Firing

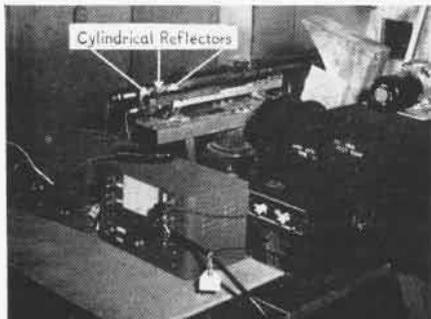
The aviation ordnance department at Naval Proving Ground, Dahlgren, is continually searching for new and better methods of obtaining test data on the present aircraft guns as well as new experimental guns.

To find out exactly what goes on inside of a gun when it is firing, a method of tracing the movement of the parts with relation to each other has been used for some time at Dahlgren. The method was developed by the ballistics research laboratory at the Army's Aberdeen Proving Ground.

The instrumentation shown in the photograph, records the movement of small light reflectors mounted on the gun parts. The picture shows from right to left, a drum recording camera, a high intensity light source, a sequence controller, a peaking amplifier, and an electrically-driven tuning fork for timing. The gun shown is the 20 mm AN-M3 with cylindrical light reflectors attached to the bolt assembly, the bolt slides, and the gun receiver. The reflectors can be mounted on any part of the gun that moves during firing.

The path that the reflectors travel relative to each other during the burst firing of the gun is recorded on photographic paper by reflection of the light and the sequence of events can then be studied, distances measured, velocities and accelerations calculated and a permanent record made of just what happens inside the gun.

Valuable Data: Such data are of great value in the study of the functioning of new



REFLECTORS SEND LIGHT BEAMS INTO CAMERAS

parts, modifications to increase the rate of fire, or decrease the parts breakage such as new type spring etc., and in smoothing out the functioning of the gun by reducing impact loadings and dynamic stresses.

Favorable Results: The results of the method described above are more accurate than the previous methods used which consisted of taking high speed photographs to determine the relative motion of gun parts as caught by the camera during firing.

THE HOWLER

Check The Bottles! When the pilot of an F4U-4 used the landing gear emergency dump bottle, carbon dioxide escaped through the valve stem. The landing gear only partially extended; result: a wheels-up landing.

Examination of the valve assembly showed insufficient packing in the valve to form a seal when the jam nut was tightened. Other bottles showed loose jam nuts.

The valve assembly, jam nut, and rubber packing should be inspected for proper security at every 120 hour check and upon refilling of the carbon dioxide bottle.

False Alarm on Beechcraft. An overhaul activity reports that operating activities have been replacing a considerable number of wheel and axle assemblies on SNB/JRB aircraft equipped with Bendix wheels and brakes because of the appearance of a crack between the axle, Beech P/N 804-188302, and the sleeve, Beech P/N 804-188304.

The crack, if present, can be located readily by examining the shoulder between the axle and sleeve immediately adjacent to the inboard leg of the landing gear fork. (Note: This area is not to be confused with the welded joint between the sleeve and the axle plate, Beech P/N 804-188303.)

Investigation shows that the crack described above is not a structural failure but is only in the soft solder which has been applied to produce a water-tight seal between the axle and sleeve. The application of the solder is clearly indicated in Beech Aircraft Drawing No. 804-188300, which covers the construction of the landing gear axle assembly.

Activities operating SNB and JRB aircraft can therefore discount cracks in the area described and retain the affected assemblies in service. Resoldering of the crack can be accomplished by the operating activity without difficulty.

LETTERS

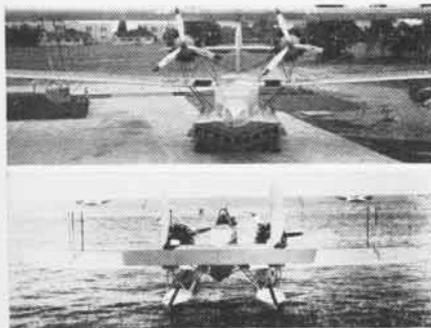
SIRS:

A couple of would-be, or has-been big boat pilots got into an argument as to whether the PD-1 aircraft was of single hull or twin float construction. Will you be so kind as to settle this matter for us by publishing pictures of the PD-1 and P2D-1?

E. F. HARSCHUTZ, LT. CDR.

NATC PATUXENT RIVER

* Files of Aviation History Unit produced the accompanying photos of the PD-1 (top) with single hull and the P2D-1 with twin floats.



SIRS:

After reading your write-up on the *Blue Angels*, I felt very fortunate when I was able to witness one of their shows. On 19 June, Bemidji, Minnesota, held an airshow to celebrate the dedication of its new administration building and also the commissioning of NAS MINNEAPOLIS' first AVU(A). Needless to say the *Blue Angels* were the frosting on the aerial cake. However, as I was present at the scene with my camera, I would like to call to your attention the fact that the "Angel" flying the number



four spot in *Bearcat* number four must have gotten out of the wrong side of the bed that morning, for he is the only man in the outfit with his prop out of formation.

I'm sure, however, this fact didn't greatly dampen the audience's appreciation of the beautiful job of *precision* formation flying.

JAMES R. PERKINS, LT. (jg)

VF-65-A
NAS MINNEAPOLIS

SIRS:

Pilots making 1,000th landings on carriers usually get to cut a ceremonial cake for the occasion. This squadron had one slightly out of the ordinary.

During refresher landings on the *Boxer*, Lt. Col. Moore, the CO, made the 21,000th landing aboard. Since he was to fly ashore as soon as his landings were completed, he was informed over the bull horn by the air officer that he would be told how the traditional cake tasted.

However, Lt. Col. Schlapkohl, MAG-12 exec, was held up aboard ship over the lunch hour because of mechanical difficulties, so acted as proxy at the cake cutting. Upon returning to El Toro later in the day, he brought sufficient cake to give every pilot of the squadron a taste in the VMF-242 ready room.

PUBLIC INFORMATION OFFICER
VMF-452, EL TORO

SIRS:

I believe the ingenuity of electronics shop personnel in setting up the shop installations shown here deserves mention. The installation recently was praised highly by the inspecting staff of the Chief of Naval Air Reserve Training.

The accompanying picture shows prefabricated work benches allotted to the electronics shop. When installed, however, it was found that due to the shape of the shop, the overhanging shelves on the fine new benches blocked off overhead and outside lighting and substantially reduced their efficiency as work benches.

Shop enlisted men went in quest of a method to eliminate the obstacle and came upon a pile of equipment declared surplus,



which had also-surplus fluorescent lighting fixtures attached. Stripping off the ballasts, sockets and tubes the fixtures were installed on the new benches. Metal shades were then improvised in the sheet metal shop which threw illumination to the work tables below and to the testing equipment above.

The CNART staff declared the shop lashup the best installation of the kind in the command.

J. M. PARSONS, LT. CDR.
PUBLIC INFORMATION OFFICER
NAS NEW ORLEANS

SIRS:

The suggestion as contained in your article entitled "CL Pilots at Shanghai" in the June edition, that aircraft operations in the Whangpoo river present "extreme difficulties," is concurred in. It is believed that "considerable" would have been a better word than "extreme," however, for the further intimation contained in your article that such operations are either "impossible" or "impractical" is in error.

Witness the experience which the writer's own squadron, VP-25, gained in such operations at that very site. Other PBM squadrons which operated there were VH-4, VH-6 and VP-21. *Mariners* flew from the river continuously from soon after VJ day until midyear in 1946.

The AVP's *Greenwich Bay*, *Duxbury Bay* and *Floyd's Bay* were among the many tenders which at one time or another during the same period provided the necessary logistic support to planes and crews at Shanghai. These ships were tied up at a coal wharf not far from Lungwan airport. A crude but serviceable ramp at this field provided the necessary access to "terra firma" when aircraft required beaching.

For the most part, they rode at anchor. The difficulties in water operations to which the article alluded were augmented by strong currents and winds. These never seemed to combine to facilitate the making of buoys. On some occasions, literally hours have been spent in the attempts to tie up and secure after a flight.

For the same reasons, rearming boats were more of a menace than usual when effecting landings, to which circumstances heavily-dented fuselages and stabilizers bore continuous witness.

Despite the many difficulties, however, to my knowledge no major mishaps ever occurred in the Whangpoo in connection with aircraft operations mentioned above. The successful tour of Fleet Air Wing One in that area is ample testimony to both the possibility and practicality of the venture.

H. G. TOMLIN, LT. CDR.
CNO, NAVY DEPT.

LETTERS



SIRS:

Enclosed is a picture of an SC-1 being recovered at sea which we thought would be of interest to NAVAL AVIATION NEWS. The picture might well be entitled, "A Sturdy Hoisting Sling."

Believe it or not, this aircraft was recovered with only minor damage. It required only the replacement of a pitot tube and lines in wing tip. The wing tip float was stove in a bit also, but very slightly.

This incident happened during final stages of a *Charlie* recovery on a recent Reserve cruise. The sled got into the wake of the ship and carried the plane into the stern of the ship. It was attempted to bring the plane out of this position by training the crane around, at which time the port wing tip float was submerged about six or eight feet under water.

A few seconds later the plane righted itself and was hoisted aboard. Incidentally, the pilot, Lt. (jg) W. R. Wilson, USN, bailed out about five seconds after this picture was snapped and was recovered very shortly after by the ship's crash boat. The pilot figured it was time to bail out after the plane passed a 90 degree list to port, for fear the hoisting sling would carry away.

O. E. WHEELER, LT.

AVIATION UNIT
U.S.S. LITTLE ROCK (CL-92)

SIRS:

A former Naval Air Transport plane and crew are shown in this picture just prior to departure on a flight that inaugurated the first scheduled flight of a Navy transport from Hickam Air Force Base under the newly organized Military Air Transport Service.

NATS, combined with ATC, make up the new MATS organization which will now



use facilities at Hickam instead of operating independently from that base and from John Rodgers Airport.

Pictured on the loading ramp from left to right are: Ens. Carleton Nordling, navigator; Edgar Kentfield, first radioman; Billye Trout, flight orderly; Paul Whitneer, second radioman; and Lt. Cdr. Franklin McMillan, copilot. At the foot of the ramp are plane commander Lt. (jg) George Kimmons and air traffic officer, Lt. John B. Copeland.

PUBLIC INFORMATION OFFICER
HQ., PAC. DIV, MATS

SIRS:

In a hotly contested match recently on the NAS KANEHOE BAY rifle range out in Hawaii, VP-MS-7's rifle team downed a scrapping VP-HL-13 team with a close one point margin to win the Fleet Air Wing Two rifle championship.

At the end of the shoot, both teams were tied with a total score of 827 points out of a possible 900. The final decision was made with the high scoring team in rapid fire, in which VP-MS-7 edged out the landplane squadron by a single point.

High scorers of the winning team were Lt. B. S. Umbarger, and ADC J. R. Berg, who tied with a total of 171 points out of a possible 180. In rapid fire, each fired 16 bullseyes out of 16.

The range fired upon was a regulation 200 yard range, both teams using the M-1 Garand rifle.

The championship team shown above are, kneeling left to right: LT. A. L. Rasmussen, LT B. S. Umbarger, Ensign M. E. Morris. Standing: ADC J. R. Berg, AOC H. J. Hendricks, Alternate, and AD1 R. V. Mayer.

W. WEEKS, LT. CDR.

VP-MS-7, PACIFIC



Published monthly by Chief of Naval Operations (OP-50-D) and Bureau of Aeronautics to disseminate safety, survival, maintenance and technical data. Air mail should be used if practicable, address to: Chief of Naval Operations, Naval Aviation News, Navy Department, Washington 25, D. C. Direct communication can be made to Naval Aviation News, Room 4927, Main Navy Bldg., office telephone extension 61662.

CONTENTS

Navy Test Pilot	1
Russian Air Force	13
Putt Putt	16
VT-29	18
Navy Neptune	20
Water Characteristics	22
NaNews at New Orleans	23
Reserve Flying	25
Globe Circlers	28
Navy Mine Depot	31
Maps A La Mode	32
Banner Launcher	33

● THE COVER

Nowhere in the world is there more spectacular mountain scenery than in Alaska and no photographer has captured this scenery better than a cameraman from VPP-1 who caught three PB4Y-1P's flying past a tremendous chasm near Big Delta, Alaska. A detachment of VPP-1 under Lt. Cdr. Charles A. Van Dusen is making an aerial survey of Alaskan resources, in cooperation with VP-ML-4.

● PHOTO CREDITS

Four drawings of Russian jet fighters and bombers, pgs. 13-14, courtesy of *Aviation Week*; photo of Russian version of B-29, pg. 15, from Boeing Aircraft Co. Photo on back cover, of VMF-144 Corsairs, from NARTU Jacksonville.

● AIR STATION QUIZ

Top—Mustin Field, Naval Air Material Center, Philadelphia.
Lower—NAAS Chincoteague, Virginia.

● RECOGNITION QUIZ

Top—Vampire, single-jet built by DeHavilland for the British Navy.
Bottom—Hornet, twin-engine, carrier-based plane built also by DeHavilland.

● THE STAFF

Lt. Cdr. Arthur L. Schoeni
Editor

Dorothy E. Ames
Asst. Editor

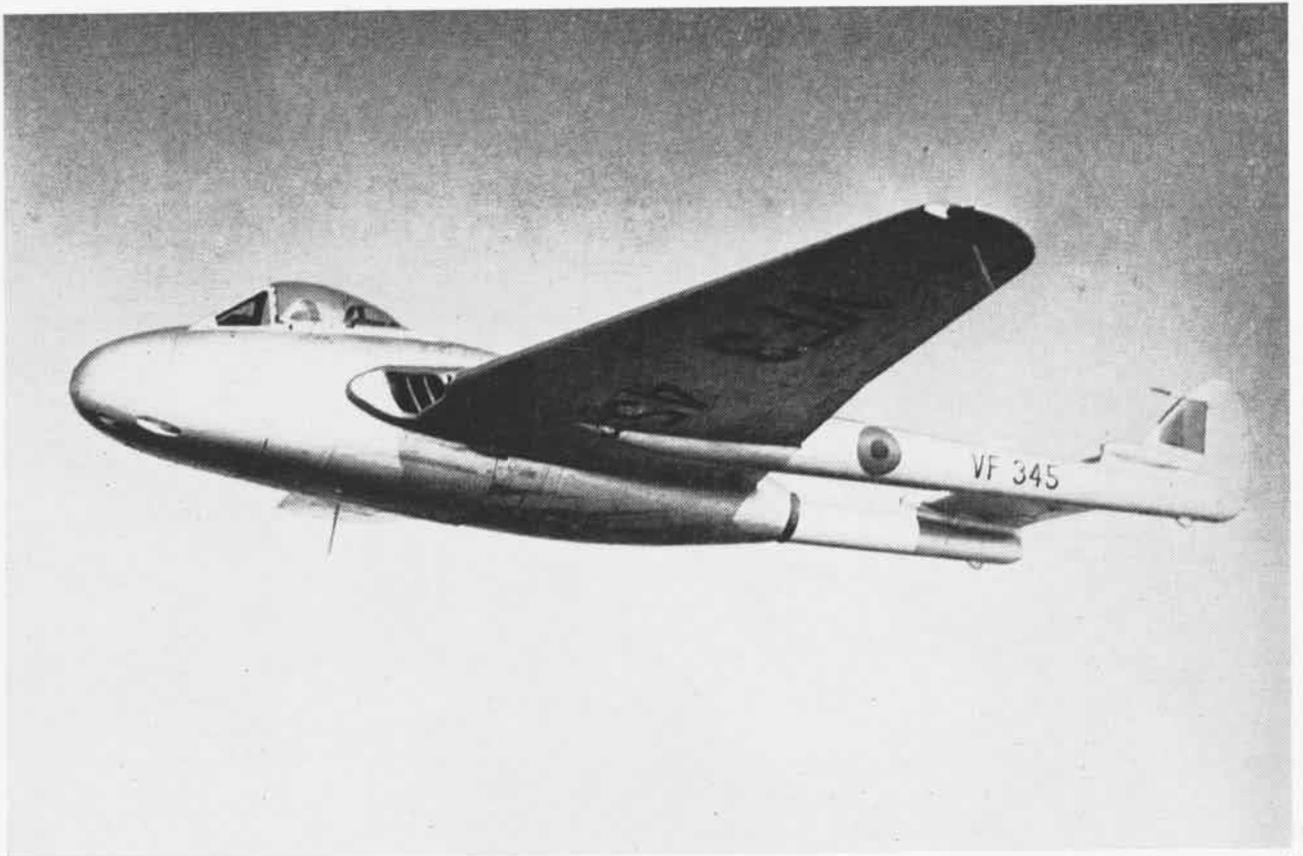
Lt. Cdr. William H. Huff
Feature Editor

Lt. Cdr. Rosalie W. Martin
Reserve Editor

Lt. Cdr. Andrew W. Bright
Flight Safety Editor

James M. Springer
Art Director

NAVAL AVIATION
NEWS



SLEEK AND FAST

THESE TWO planes may look strange to eyes accustomed to Navy aircraft. One holds the world's altitude record. The insignia may be a clue. Answers on the opposite page.



Today! \$2 Still Brings You 12 Big Issues

NAVAL AVIATION NEWS

Keep Posted! Send In The Enclosed Coupon



NAVAL AVIATION

NEWS